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A STATEMENT has appeared in some of the Western papers that in spite of the low price of lead the St. Joseph Lead Company, of Missouri, has had such a prosperous year that the directors have been able to distribute 42 per cent. in dividends to their stockholders. Though this report is not exactly correct, the financial result of the company's operation was still extremely satisfactory, and we congratulate its responsible officers on the ability they have displayed in managing its affairs. We understand that improvements of a value exceeding $500,000, principally represented by a railroad from the mines to the Mississippi River, have been made, out of the last and preceding year's profits, and that a scrip dividend of this amount, or 33⅓ per cent. on the capital stock ($1,500,000), as well as four quarterly dividends of two per cent. each in cash have been distributed. This scrip is redeemable at par at the option of the company. It is rumored that it is not improbable that this redemption will take place at the end of the current year. We have at various times had occasion to illustrate and describe the methods in use for the economical handling of the ore at this company's mines and works, and commended it to our readers as an example of good practice, and we may now cite these results as full confirmation of our approval. It should be remembered that this company treats a *non-argentiferous* lead ore, and is, therefore, dependent wholly on lead for its profits.

ARE THERE TO BE BANK OF ENGLAND SILVER NOTES?

Reports have been circulated during the past week that the Bank of England intends issuing one pound notes redeemable in silver, and it was said that no less than $15,000,000 of silver bullion had been purchased for that purpose. This report has been contradicted and, indeed, there seems to be much uncertainty on the subject. The probabilities are that the Bank of England will issue one pound notes, but that these will be redeemable in silver and will be made legal tender to an unlimited amount is extremely improbable. The Indian requirements have been unusually heavy of late and the British mint has also purchased more silver than usual, as we have several times pointed out in our market reports. These increased demands have produced a legitimate advance in the price of the metal, and the prospects for the future are such as to render unnecessary any such special legislation in its favor as is now proposed in Washington.

IS THE STANDARD DOLLAR BEING COUNTERFEITED?

A sensational and rather apocryphal story appears in one of the New York dailies to the effect that large numbers of counterfeited United States standard silver dollars are being made in Mexico and circulated on this side of the border. The amount thus far floated is stated at $5,000,000. The coins are described as exact fac-similes of the regular issue, and to be of full weight and of standard alloyage.

The object in imitating the American Bland dollar, if it is really being done, would of course be to secure the profit resulting from the difference between the bullion value of the silver used and the nominal but legalized par value. This difference, or seigniorage, has recently been as great as 28 cents on each dollar; that is, the bullion value of the silver contents of 100 cents in legal tender has been as low as 72 cents. Such a margin would be sufficiently tempting. Seventy-two cents worth of silver could be exchanged for 100 cents' worth of American goods.

Though the story lacks confirmatory evidence, and comes to us simply as a rumor, without any definite charges as to persons or localities, and without any authoritative evidence whatever, it represents a possible condition of affairs. There are a number of presses in the private mints in Mexico, and it would not be difficult to imitate closely the American dies. But we doubt very much whether coins struck from these fraudulent dies would be such perfect reproductions from the genuine pieces as to be indistinguishable by experts, which is the statement made by our contemporary. The risk to coiners of United States money operating in a foreign country would not be great, on the present terms of international law, the whole danger, such as it is, being assumed by the persons having in their possession or attempting to pass the counterfeit coins in this country. And if the imitations were as perfect as is claimed, it would be difficult to convict the negotiators.

Should this story prove to be well founded—which we are not yet prepared to believe—the only remedy would be to call upon the friendly offices of the Mexican authorities to suppress the manufacture. But it will be remembered that when South American bonds were counterfeited in this country some years ago the counterfeiters escaped punishment because they did not attempt to negotiate the bonds here, as at that time our laws did not meet the case. They have since been amended to cover such cases. Mexico would undoubtedly make similar provision, if it should become necessary, as a matter of international courtesy and equity.

A rumor, somewhat similar to this, was current a few years back, when it was reported that the dies of the half-dollars of certain issues of the New Orleans mint had been stolen during the civil war and were being used to coin pieces of dates in the "thirties." So long as the bullion value and the legal tender value of our silver coinage present such a wide margin of difference, there will always be a strong temptation to put in circulation this most plausible form of counterfeit.

THE COPPER TARIFF QUESTION AND THE NATIONAL ELECTRIC LIGHT ASSOCIATION.

The petition for the abolition of the duty upon copper presented to Congress by the committee of the National Electric Light Association, appointed for the purpose, brings into relief the difference in interest between the copper consumers and producers. The arguments presented by the petitioners through Mr. GEORGE M. PHELPS make out a strong case from their point of view for the removal of the duty, but it can hardly be expected that the producers will agree with them in their statement that "the abolition of the copper tariff does not touch the question of protection to American industry."

The petition itself is brief and to the point, simply stating that the undersigned were appointed by the National Electric Light Association, a body composed of representatives of electric lighting companies, manufacturers of and dealers in electric lighting and supplies, to petition for the abolition of the duty on copper ingot, plate, bars, rod and wire.

The array of figures given by Mr. Phelps to prove the national importance of the industries for the distribution of light and power by elec-

tricity, will bring home to many the vast interests involved on the consumers' side in connection with this single branch of consumption. It is well known in the copper trade that the recent enormous consumptive demand for the metal has been largely due to the requirements for electrical purposes, and with these figures the extent of the demand can be approximately measured. At the time of the last convention of the Association, August 8th, 1889, the capital then invested in the industries referred to was estimated from statistics collected by the secretary of the Association to be no less than $275,000,000. Further, the statement that this sum represents mainly electrical apparatus and electric conductors for the supply of 238,000 arc lamps and 2,700,000 incandescent lamps, in all of which apparatus and conductors copper is the chief material, explains the importance of the price of copper to those interested.

The statement is made that competent experts estimate that from one-fourth to one-third of the total cost of electric plant for light and power distribution is expended for copper.

The arguments used against the producers must bring some comfort to them in showing the magnitude of the newly-created market provided for their product, and one that may be said to be still in its infancy.

The reasons, which we give below, assigned to explain how the question of protection to an American industry is eliminated from the proposed abolition of the tariff, are interesting and no doubt conclusive to many; though it is surprising that the other copper consuming industries in the country have not co-operated with the National Electric Light Association in this matter. It is pointed out that the duty on copper appears to be wholly superfluous as a protection to American producers, since "the United States not only produces more copper than it consumes, and consequently exports that metal, but it possesses the richest and most easily worked copper mines in the world, and its mining companies produce the metal, and put it in the market at a lower cost than is possible to the Spanish or Chilian miners. Obviously, the American producers of copper require no duty, to protect their domestic market, and their exports of copper furnish sufficient evidence of their ability to meet competition in foreign markets."

In this portion of the argument we do not think Mr. PHELPS is well informed as to the richness of or the ease with which the principal copper mines in the United States can be worked, and as to the low price at which copper can be placed on the market, more credit is due to the miners for their skill and good management than to the natural advantages offered by the deposits. There are in fact only a very few exceptionally rich mines in this country. The concluding portion of the argument is as follows:

"The existing duty is of no appreciable value to the National Treasury, because copper is not imported in any considerable quantity. As a source of national revenue the copper tariff is practically useless, and the returns from it could not be increased materially under the conditions of production throughout the world by any modification of the rate of duty, if the government needed increased revenue, which it confessedly does not."

Undoubtedly the high prices exacted by the late French syndicate offer a strong argument against the maintenance of a tariff of four cents a pound on copper coming into this country, even though the high prices were not due to the tariff.

Here follows an extract from an editorial in the New York *Tribune* of May 6th, 1889, in which it condemned the copper producers for the part they had taken in the copper "corner," and stated that it would now be hard to resist a demand for the removal of all duties on copper, ore, pig, and bar:

"In short, and to recapitulate, in the opinion of the National Electric Light Association, the duty on copper being useless for revenue and unnecessary for protection, should not be suffered to remain on the statute books of the United States, since its only remaining function is to serve as an ally to the promoters of combinations for putting up prices, a process to which the government should not lend its assistance."

SECRETARY WINDOM'S SILVER SCHEME.

The further study of this scheme for advancing the price of silver has evidently made apparent to Secretary WINDOM some of the dangers which we have pointed out as existing in it. At first it was assumed by the Treasury officials that there could not come to us any large amount of foreign silver because the consumption of silver abroad appears to quite equal or even exceed the production, and that consequently no efforts would be needed to keep foreign silver out. The ENGINEERING AND MINING JOURNAL, however, pointed out that should the United States offer to buy all the silver offered at $1.29 per ounce—the price to which the metal would soon go under these circumstances—then probably nearly every silver basis or bi-metallic country would promptly avail itself of this excellent opportunity to realize on a portion of its silver by exchanging it at such an abnormally high price for our gold. This danger is both real and very serious, and it would certainly necessitate the prompt repeal of the act and the stoppage of purchases of silver, which in turn would bring the price of the metal down to a lower point than it has yet reached. This danger seems to be now appreciated.

The full text of the bill prepared under the auspices of the Secretary of the Treasury, and which is given on another page, stipulates that "no deposit consisting in whole or in part of silver bullion or foreign silver coins imported into this country, or bars resulting from melted or refined foreign silver coins, shall be received under the provisions of this act." Since, however, all "silver bullion which is the product of the mines of the United States, *or of ores smelted or refined* in the United States," is acceptable, the proviso above mentioned is not of much consequence. Base bullion or mattes may be imported and refined here. The actual cost of refining the silver in these may not much exceed *one cent an ounce*, and the foreign silver would thus get into our Treasury at a figure to the vendor of perhaps a few cents an ounce less than our domestic silver.

If it be the intention of the government to limit the purchases to American silver, then the only efficient method of securing this would be by limiting purchases to the amount of the domestic silver production. In the year 1889 this country produced nearly 48,000,000 ounces, of which about 8,000,000 ounces were consumed in the arts. If the government should limit its purchases to 4,000,000 ounces a month, it would then provide a market for our entire output, unless, indeed, foreign silver should come in and share this market in spite of the Secretary's precautions.

It may well be questioned whether the government has any right to use the taxpayers' money to provide a market for and to advance the price of silver, or if it can do this justly, why it should not buy all the nickel at, say, $1 an ounce, or all the copper, at, say, 20 cents a pound—both of these are so-called "money metals," and have as much right as silver to the especial care of the government. Possibly even the lead, zinc and iron men might then want the corner extended for their benefit. We do not think it a wise policy for the government to pursue, and we are convinced that should this bill be enacted, then, when the reaction comes, as come it certainly will, silver will attain a lower level than it has yet reached. Such has been the universal experience with corners in other metals.

If the object be simply to get rid of a large portion of the embarrassing "surplus," and thus prevent a reduction of taxation or of the tariff, this scheme promises to be a success; or if it be intended simply to advance the price of silver temporarily, for the benefit, chiefly, of a small number of producers, at the cost of the general public, it will certainly be successful; for if the government will buy all the American-produced or refined silver offered the price will quickly go to $1.29 per ounce. But silver has been advancing for some time past in a perfectly natural way, and there is apparently no urgent need of this special legislation, which, on the other hand, cannot fail to raise up enemies to silver among those who feel aggrieved because they get no share in the "plunder."

It is also unwise to leave so much to the discretion of the Secretary or Secretary and President, and whenever this discretion is exercised it will certainly make more enemies than friends for the administration. It is wiser to have the law declare specifically what is to be done, how much silver may be purchased, and to leave as little as possible to the discretion of any official. It is not pretended on any part that the issue of this additional amount of currency is needed by the business of the country, though there can be no question but that such a large addition to the circulating medium (just as in the war times did the large issues of greenbacks) will have the effect of inflating values and creating a temporary "boom." Prudent business men, however, all deprecate "booms," which invariably are followed by reactions injurious to trade, and violent fluctuations in the price of any article, and especially of silver, are injurious. Nothing is more certain than that Congress will not permanently continue the investment of sixty to one hundred million dollars of the people's money in the purchase of unnecessary silver, merely with the object of maintaining its price above the level it would attain under the sole influence of ordinary supply and demand which govern the prices of other metals. Whenever these treasury purchases cease the price of the metal will decline; and since the government will then be loaded up with such a stock of the metal that it will make no purchases whatever probably for many years, the silver market will be left with heavy stocks and no demand. It would be better for the industry of silver mining that the purchases be moderate and continuous, with steady prices, than that they be fitful, with prices fluctuating wildly.

THE PRODUCTION AND CONSUMPTION OF COPPER.

We publish herewith the tables of copper production and consumption, having made in them the necessary corrections of the few clerical errors which, as already explained, had crept into them when published in our issue of January 4th. We have also had the opportunity to get the actual figures of output in December of some mines for which we then had only the estimates. The final figures, while materially changed in a few instances, do not much affect the totals except in the matter of exports, in which the figures were erroneously stated.

The comparison of the tabular statements of the production of copper in 1888 and 1889 is very instructive. During 1888 the French syndicate was in full control of the markets, and prices were advanced to an average of 16¼c. a pound for Lake copper. Consumption was so severely checked that it declined from 140,000,000 pounds in 1887 to 112,000,000

in 1888, though the production in this year was much greater than in 1887. During the entire period in which the syndicate controlled the markets every effort was made by manufacturers to get along without purchasing new copper, and this condition of affairs continued up to the time of the collapse of the syndicate in March, 1889, when the stocks of copper held by it in this country amounted to no less than about 70,000,000 pounds, nearly one-half of which was Lake copper. As soon as the collapse came consumption at once increased and grew at a marvelous rate up to the close of the year.

The total production of copper in this country, including that produced from imported ores, in 1889, was 241,830,000 pounds, or only about 9,000,000 pounds more than in 1888, and added to the stock on hand at the beginning of the year, it left available no less than 316,830,000 pounds. Of this only about 73,000,000 pounds were exported, this figure being based on official returns for eleven months.

The stock of copper on hand at the end of the year we were able, through the courtesy of all the holders of stock, to determine with great accuracy. It was about 65,000,000 pounds, an amount larger, it is true, than the trade generally expected, but less than the syndicate alone held in March last. A large part of the present stock is the legacy of the syndicate, but a considerable portion of this was already sold at the end of the year and was awaiting shipment. The exports and stock on hand deducted from the available supply gives the consumption, which reached the enormous total of nearly 179,000,000 pounds. The demand from every source during the second half of the year was enormous; so great, indeed, that to the trade it appeared to have absorbed nearly the entire stock on hand. It is not to be expected that this rate of consumption will continue, for the demand was partly due to the requirements for replenishing stocks allowed to get to an unusually low point while the syndicate was in operation; but it is also probable that with the continuance of moderate prices, the consumption of copper will continue very large in this country. The conditions of the market now offer a fair basis for the development of new copper mines, and we expect to see quite a "boom" in that department of mining during the current year.

COPPER PRODUCTION BY STATES.

	1888.	1889	
	Pounds.	Pounds.	Long Tons.
Lake Superior	86,584,124	86,630,000	38,679
Arizona	31,497,300	32,300,000	14,419
Montana	97,897,968	104,200,000	46,518
New Mexico	1,631,271	3,400,000	1,518
California	1,570,021	1,700,000	758
Colorado	3,000,000	3,100,000	1,384
Utah	2,131,047	2,400,000	1,070
All other sources	3,241,725	3,000,000	1,338
Domestic production	227,853,456	236,730,000	105,684
From imported ores	5,000,000	5,100,000	2,275
Total production	232,853,456	241,830,000	107,959
Stocks, beginning of year	40,000,000	75,000,000	33,482
Available supply	272,853,456	316,830,000	141,441
Deducts exports in ore, matte, ingots, etc.	85,000,000	73,000,000	32,589
Consumption	112,853,456	178,830,000	79,836
Stocks on hand end of year	75,000,000	65,000,000	29,016

COPPER PRODUCTION OF LAKE SUPERIOR MINES.

	1887.	1888.	1889.		1887.	1888.	1889.
Cal. & Hec.	46,016,123	50,295,720	48,640 029	Huron	1,484,103	2,370,857	2,220,894
Quincy	5,603,691	6,367,899	6 311 000	Ridge	84,902	50,924	28,000
Osceola	3,574,972	4,134,320	4,454,152	Wolverine	2,300	.....	.....
Franklin	3.915 838	3,655,751	4,353,195	Tamarack	7,396,529	11,411,325	10,614,149
Allouez	885.010	314,198	1,762,816	Kearsarge	21,237	829,185	1,929,127
Atlantic	3,641,865	3,974,972	3.700 000	Evergreen	.....	41,000	28,773
Central	2,199,133	1,817,023	1,275,000	Tributers	61,000	50,000	21,693
Mass	.....	71.090	76 675				
Cop. Falls	560,000	1,193,950	720,000	Total	75,471,890	86,584,124	86,630,600
National	25,187	.....	494,497				

COPPER PRODUCTION OF ARIZONA.

	1884.	1885.	1886.	1887.	1888.	1889.
Copper Queen	7,700,000	6,721,535	3,800,000	5,945,550	9,004,771	9,024,000
Holbrook & Cave	.....	.....	.....	.....	2,920,748	2,208.000
Old Dominion	7,400,000	4,688,610	4,567,665	1,444,770	4,870,000	6,003,220
Arizona Copper	3,760,000	6,832,880	5,250,000	5,714,000	7,133,188	7,600,000
Detroit	2,940,000	3,456,000	2,135,000	4,404,321	5,233,415	4,326,000
United Verde	3,680,000	.....	.....	272,124	3,200,000	2,100,000
Other mines	1,254,345	1,007,301	247,335	9,235	154,171	1,038,780
	26,734,345	22,706,366	16,000,000	17,790,000	32,516,293	32,300,000

COPPER PRODUCTION OF MONTANA.

	1884.	1885.	1886.	1887.	1888.	1889.
Anaconda	23,000,000	36,000,000	33,267,864	57,000,000	63,245,473	61,647,000
Parrott	9,300,000	9,809,000	10,000,000	10,000,000	10 750,000	9.500,000
Boston—Montana	6,600,000	7,500,000	2,000,000	1,500,000	18,273,697	26,681,764
Clark's Colusa	600,000	10.000,000	7,000,000	7,100,000	700,000	
Butte Reduction Works	2,000,000	2,500,000	1,700,000	1,565,000	3,521,565	1,700,000
Colorado Sm. & Mg. Co.	.....	1,200,000	2,000,000	1,500,000	1,488,000	2,964,000
Butte & Boston	.....	.....	.....	.....	.....	1,300,000
All others	1,593,054	798,864	1,643,757	35,000	521,295	407,236
	43,093,054	67,798,864	57,611,621	78,700,000	98,500,000	104,200,000

NEW PUBLICATIONS.

FOSSIL FISHES AND FOSSIL PLANTS OF THE TRIASSIC ROCKS OF NEW JERSEY AND THE CONNECTICUT VALLEY. By Prof. JOHN S. NEWBERRY. Monograph No. XIV. of the United States Geological Survey. Cloth, 4to, xiv. + 152 pp.; 26 plates. Government Printing Office, Washington, 1888. Price $1.

Professor Newberry's monograph furnishes a better knowledge of the fauna and flora of the Trias in Eastern North America; a field of much interest to palæontologists, but one which has hitherto received imperfect treatment, through the scattered contributions of Rogers, Banbury, the Redfields, Emmons, Fontaine, Hitchcock and others are cited with deserved praise by the present author. The Triassic fossils of this region occur in great abundance, variety and perfection of detail, and are said to have probably furnished the first specimens collected on this continent. The excellent collection in the museum of Columbia College, and the extensive gatherings made recently by Professor Newberry's assistants, have supplied material for a much more systematic study than had previously been available. The twenty-six very handsome plates which accompany this volume figure a large number of species, and are remarkable as showing the excellent state of preservation of the fossils illustrated. The text is more than a mere catalogue, and is written in Professor Newberry's usual clear style.

THE COLLECTION OF BUILDING AND ORNAMENTAL STONES IN THE UNITED STATES NATIONAL MUSEUM. A handbook and catalogue. By GEORGE P. MERRILL. Published by the Smithsonian Institution and United States National Museum. Government Printing Office, Washington, 1889. Paper, 8vo, 371 pp. including index. Illustrated.

The collection of building and ornamental stones in the National Museum is one of the most noteworthy exhibits there stored. This collection is made up very largely of material derived from the Centennial Exhibition at Philadelphia and from the work of the Tenth Census, of which the division of building stones was in charge of the late Dr. G. W. Hawes, to whose efforts was due the successful inception of the work, since prosecuted with marked energy by Mr. Merrill, the present curator of the department of lithology and practical geology. Most of the specimens are handsomely dressed 4-inch cubes, showing on different sides the natural rock face and the various methods of surfacing applied in practice.

More than one-half of the present contribution is devoted to descriptive and historical matter. Mr. Merrill discusses the subject from a very practical standpoint and gives a succinct account of the rock forming minerals and the physical and chemical characteristics of rocks used for structural and ornamental purposes; the information being of precisely the character sought by quarrymen, builders and others. A considerable portion of the space is devoted to quarrying and stone-cutting appliances.

This memoir, while less pretentious than Vol. X. of the last census reports, the number devoted to building stones, supplies much useful information in a small compass, and expressed in an entirely popular manner.

REPORT ON THE INTERNAL COMMERCE OF THE UNITED STATES FOR THE FISCAL YEAR 1889. By Col. WM. E. SWITZLER, Chief of the Bureau of Statistics of the Treasury Department. Government Printing Office, Washington, 1889. Cloth, 8vo, 897 pages.

This report, in continuation of the plan of treating a special geographical area annually, it having been found to be impossible to adequately discuss the internal commerce of the whole country each year, takes up the territory lying between the Rocky Mountains and the Mississippi River, and comprising Arkansas, Colorado, Dakota, Indian Territory, Kansas, Missouri, Montana, Nebraska, New Mexico, Texas and Wyoming, the greater part of these political divisions being known as the "Louisiana purchase."

This vast area includes some of the most important mining districts of gold, silver, lead, copper, and lesser mineral products, and is an especially interesting field. In the present report a chapter is devoted to each of the states and territories named, the contributions being from various sources. The historical portions of the book, and particularly those relating to mineral discoveries, make the volume more readable than is usual with reports of the Bureau of Statistics. Much of this material, however, has previously been published, and is accessible in other publications. Some of it, too, is open to criticism on the score of being entirely too highly colored for the staid pages of a serious government report. Mining yarns are apt to become elastic with age, and the reader will find not a few which seem to have been well stretched. Some of the local contributors, in the laudable effort to make a good showing for the regions they describe and are interested in, have gone beyond conservative limits. In general it may be said that closer editing would have enhanced the value of the report. Too much care cannot be taken in publishing statements professedly "official." As an example of generous treatment the description of the Black Hills tin properties might be cited, and others can be found in the accounts of the prospects of some of the undeveloped gold and silver camps.

The Torpedo Boat "Cushing."—The first regular torpedo boat of the United States Navy is practically completed, and will shortly undergo her speed trials. She is appropriately named after the gallant officer who destroyed the Confederate ironclad "Albemarle." The hull and motive machinery have been built by the Herreshoff Manufacturing Company, of Bristol, R. I. The guaranteed speed is 23 knots per hour, though it is expected that the trials will develop a higher speed, perhaps 25 knots, in which case the builders will be entitled to a premium upon the contract price. The length is 138 feet; depth, 10 feet; and extreme draft of hull, 4 feet four inches, though the rudder extends below this. The peculiarities of the new boat are her exceedingly light draft, fine lines, partly balanced rudder, inboard caps of the torpedo tubes (to avoid the spray-making effects of outward caps, which would lead to detection in night attacks), and the overhang guard rails, which are intended to protect the twin screws (these projecting beyond the sides of the hull) in case of collision, the extreme beam being only 15 feet). The performance of the "Cushing" will probably have considerable effect on the selection of type for the other proposed torpedo boats, and also upon the extent to which the government will go in this direction. The boat was launched January 23d.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents

Alloyage and Igneous Cementation.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: My attention has been called to an error I have committed in the following equation, contained in the concluding sentence of my article on "Alloyage and Igneous Cementation," published in your issue of November 16th, 1889, viz:

$$3\,(Fe_3 + FeO) + 6\,CO = 3\,(Fe_4C) + 3\,CO_2,$$

which should read,

$$3\,(Fe_3 + FeO) + 9\,CO = 3\,(Fe_4C) + 6\,CO_2,$$

as becomes evident from the equation following it. Both, however, would have been more readily intelligible if they had been preceded by the explanatory equations:

$$3\,CO = CO_2 + CO + C$$

and

$$Fe_4O + 3\,CO = Fe_4C + 2\,CO_2.$$

Thanking you for your correction, I am, yours truly,

HOBOKEN, Jan. 24, 1889. A. D. ELBERS.

Notes from the Deccan, India.

TO THE EDITOR OF THE ENGINEERING AND MINING JOURNAL:

SIR: In sending you my subscription for the ENGINEERING AND MINING JOURNAL and that of our assayer, you may think it strange that a New York technical paper should be preferred to an English one, but the fact is, that your journal gives really useful information to engineers, whether civil, mechanical or mining, and is equally valuable to the metallurgist. The London *Mining Journal* is, no doubt, a good paper in its way, but it is too much of a financial organ to meet the wants of the professional man, and it is exactly these wants that the ENGINEERING AND MINING JOURNAL supplies. The list of useful technical works advertised in the JOURNAL is of especial benefit, and I have already taken advantage of it by ordering several of the books enumerated. I have no doubt my example will be followed by others engaged in similar pursuits in the Deccan and elsewhere.

I should much like to see the JOURNAL with a wider circulation in India, and with the development of the mining industry in Southern India there is great need of such a publication and ample room for it.

Your editorial comments and various notes on Indian irrigation are just and accurate and are much appreciated.

The affairs of the Hyderabad Deccan Company has just been settled in London, as you, no doubt, have learnt from your exchanges, and although its shares are not yet quoted on the stock exchange, that is immaterial to the concessionaires at present.

This company has obtained the right to mine for metals, coal and gems for ninety-nine years from the government of His Highness the Nizam, who is the first native prince in India, and whose policy is founded on Western methods, with "progress" for his motto.

The "Deccan," as the tract of country comprising the dominions of His Highness is called, is rich in mineral wealth, and the diamond-bearing fields or region of the famous Golconda, described in 1660 by Tavernier, the great French traveler, are in this territory. These lost diamond fields have yet to be found and exploited. The period granted by the concession for prospecting expires on December 31st, 1891. There is much here that is instructive and interesting, and should I succeed in obtaining permission from the superior authorities to contribute to the ENGINEERING AND MINING JOURNAL, I shall have great pleasure in doing so.

The company has just made a beginning, but it is the commencement of a number of vast undertakings. At the coalfield of Yullundo 300 tons a day of good steam coal are being raised. On the diamond fields on the Lower Kistna River the search for the gem is close and continued. On the gold fields three points have been selected—viz., Bovdinni, Topoldodi, and Wundullie, and mining operations are in full swing. The staff at present consists of the following officers: Messrs. Ed. W. Temby, mining superintendent; F. C. Duane and W. K. Cherry, assistant mining superintendents; Ed. Wates, assayer; J. Williamson, amalgamator, and J. L. Maybury, accountant.

The geological formation is granitoid gneiss, with patches of chloritic schists. The country is healthy, no jungle and well settled, with a population of about 125 to the square mile. The seasons are—cold weather, November to February; hot months, March to June; rainy season, July to October, with a rainfall of 29 inches in the year. India is a land of many nationalities, and in the Deccan there are three—viz., Maharatta, Telingana, and Kanarese. The last conquerors, represented by the Nizam's government, use Oordor as the court language; Arabic and Persian are also spoken by the Hyderabad nobles. The Kanarese are truthful and honest, thefts are unknown, but unfortunately they are indolent and not given to hard work.

Lingsugur is the headquarters of the "District," or, in American parlance, state, in which we are. The chief revenue, judicial and administrative officer is Mr. Abdul Kadir (a namesake of the great Algerian patriot and chief), and under him are assistant revenue and judicial officers, with a superintendent of police. At Shorapur, a strong fortress on the left bank of the Kistna, is the military force of the Nizam, the troops being commanded by Captain Fallon.

The checkered history of the country is an interesting one, and has been full of varied episodes for centuries.

I have not much to communicate at present that will interest your readers, but I shall be happy to afford you or your advertisers any information they may want as to the requirements of the country.

December 15th, 1889. DECCAN.

Cumberland Valley Colliery Company.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The property of this company is located near Pineville, Bell County, Kentucky, and consists of two mines, one on Straight Creek, known as No. 1, and the other on Stewart's Branch, known as No. 2. The company has under lease in these two tracts nearly 2,000 acres of land, all underlaid with three seams of coal, one of which we are now mining and coking, and of the other two, one is a good domestic coal and the other a gas and cannel coal.

Since the commencement of our operations, May 1st, we have built at No. 1 twenty-five bee-hive ovens 11 feet 6 inches in diameter; a large tipple with capacity of 500 tons of coal per day; main entry in the mine has been driven 590 feet; four cross entries each 165 feet; large company's store 40 by 28 feet, two stories high; company's office, 15 by 30 feet; fifteen first-class dwellings for miners; about ten ordinary dwellings for laborers, and the mine thoroughly equipped with track cars, etc.; also blacksmith shop 16 by 24 feet, well equipped. The mine at this point being connected with the main line of the Louisville & Nashville Railroad Company by a spur track 2,200 feet long.

At No. 2 main entry has been driven 250 feet, 15 feet wide; two cross entries have been driven 100 feet each; large ventilating furnace built; incline 14 feet wide, 110 feet long to a height of 35 feet above the level of the pit, so as to give large storage bin for coal. This storage bin being 20 by 30 feet, 20 feet high, set 8 feet above larry track trestle, under which we have located a crusher with a capacity of 250 tons of coal per day: larry track trestle 65 feet long; one 60 horse power boiler has been erected; also one 10 by 14 engine for driving crusher, and wire rope which runs larry; also elevator for elevating crushed coal and two hoisting engines to carry coal from pit to top of tipple. All machinery having been built by the Ainslee Cochran Company, Louisville, and the very best of the kind. Fifty ovens are about completed at this point, which are connected with the main line of the Louisville & Nashville Railroad by a spur track 2,700 feet in length.

The first attempts made to coke this coal were made in the fall and winter of 1888 by the Pine Mountain Iron and Coal Company, who built under the direction of our general manager five ovens on Straight Creek for test purposes, and the results were of such a satisfactory character that a proposition was made by us to the Pine Mountain Company to lease the mine and to buy the plant which they had already created. Since our company took charge we have added to this plant 20 additional ovens and have already broken ground for 25 more at No. 1.

The opening at Stewart's Branch is made on the same vein of coal, one and three-quarter miles distant from the opening at Straight Creek; this property being leased from the Four Mile Land Company. At Stewart's Branch we have nearly completed 50 ovens, which were put in operation December 1st, 1889, and we will then have one of the best equipped and best arranged coke plants in the United States.

The 25 ovens at Colliery No. 1 having been completed about September 1st, the ovens were fired and regular shipments of coke began about October 1st. During the month of October we shipped 600 tons of coke, which has found a ready sale at the Nashville Furnace Company's plant, at West Nashville, Tenn., also in Memphis, St. Louis and Louisville, and in all of these places it has been received with much favor. We have had the coke carefully examined as to its chemical and physical structure by Mr. John Fulton, general manager of the Cambria Iron and Steel Works, Johnstown, Pa., who says:

"Its burden bearing qualities are equal to the highest blast furnaces now in use or likely to be attempted in time to come. The hardness of this coke is so near that of the Connellsville standard that it is not necessary to draw any special distinction. The chemical analysis shows that it is a much purer fuel than that of the Connellsville standard. The ash is remarkably low, only one-third of the volume found in the Connellsville. As a clean fuel it has few, if any, superiors. It will also be noted the exceptionally low percentage of the element phosphorus in this coke, which gives it special adaptability for smelting Bessemer pig iron. The sulphur is low, under that of the standard. It will be found a very superior fuel for blast-furnace purposes, for smelting iron in cupolas, and for all metallurgical purposes in which coke is used as a fuel."

The Nashville Furnace Company state that it has been used with as good results as they had obtained from the Pocahontas coke.

We give also an analysis of this coke made by Messrs. Porter and Going, of Cincinnati, which shows: Carbon, 95·04; sulphur, ·937; ash, 4·03.

Also analysis made by Professor Peters, of the Kentucky Geological Survey, showing: Moisture, ·40; loss at red heat, ·30; fixed carbon, 94·90; ash, 4·40; sulphur, ·492.

Mr. Fulton's analysis showing: Carbon, 94·66; moisture, 1·14; ash, 3·78; sulphur, 0.59; phosphorus, ·007; volatile matter, ·041. These three analyses, made by different chemists in different sections of the country, compare very favorably.

An analysis of the coal made by Porter and Going shows: Volatile matter, 36·99; fixed carbon, 58·85; ash, 3·06; sulphur, 1·09. With these facts there can be no question but that the coke we are to-day offering on the market is as good as is made anywhere in the United States, not excepting either Connellsville or Pocahontas.

In the matter of coal, we are advised by our Southern agents, John D. Anderson & Co., of Nashville, Tenn., that they can sell readily more than we can possibly mine. The coke and coal both are being mined and manufactured at about the same cost as in any of the other fields. We possess a decided advantage over every other mine in the State of Kentucky in the fact that we are able to utilize the entire product of the mines. We have excellent facilities for shipping, our mines being connected with the main line of the Louisville & Nashville Railroad by spur tracks, one 2,200 feet, and the other 2,750 feet long, and we are assured by the Louisville & Nashville management that we shall have all of our wants supplied, so far as transportation is concerned, to handle this product. The following are the officers of the company: P. Meguiar, president; J. H. Allen, vice-president and general manager, and Geo. S. Moore, secretary and treasurer. J. H. ALLEN.

PINEVILLE, Ky.

Some Further Observations on Wurtzilite.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In my previous communication published by you Jan. 11, I presented some of the grounds on which I base my view that the mineral combines specific characters distinguishing it conclusively from the so-called "elaterites," to which some seem to have regarded it as related. I propose now to set forth some further results of my examinations, which appear to my mind

cogent enough to overcome all prejudices against the novel nature of the mineral.

1. *The Action of Ether.*—In examinations of wurtzilite, to test the effect thereon of solvents and other chemical agents, it is, of course, an essential preliminary to obtain the material in some quantity in a *comminuted* form. This proved at first a difficult problem, by reason of the peculiar combination of hardness, toughness and sectility this mineral presents. Moreover, when shaved up with a knife or turned in a lathe, a phenomenon appears of a curious sort, *possibly* electrical, though not altogether easy to comprehend. This is that the shavings stick to the knife or other tool, and to each other and to other objects, for a considerable time after being detached, thus clogging the operation and making it very troublesome. After some experiments, it was found that the most convenient and by far the most rapid way to accomplish the object is with a *grater*, a large, coarse, tinned-iron grater, such as is in common use for cheese, horse-radish and like materials, is extremely efficient. By laying this with its convexity upward on a sheet of paper and applying some force, a very rapid production may be attained of a material of the appearance of a dark colored "fine-cut" chewing tobacco. The grater, when clogged, is readily cleaned with a stiff brush, such as a common nail-brush. This fine-cut wurtzilite is well adapted for experiment with solvents, and may, furthermore, be easily ground to the finest powder in a porcelain mortar for purposes of organic analysis, etc.

Of this material 2·33 grams were digested in 17 grams of pure ethyle oxide for 25 hours at 65 degrees F, with frequent agitation.

Filtration and evaporation of the yellowish solution at a gentle heat yielded a quantity of a gamboge-yellow oil, thick and viscid in consistence, and of remarkably rank, acrid and powerful odor, compared by some to horse-radish, but to myself more like the odor of some of the malodorous umbelliferous wild plants. This oil, though at present writing it has been exposed to the air for a week has not lost its liquidity, though its odor is apparently not so strong as at first. It is not (as I have had suggested to me) the cause of the flexibility and resilience of wurtzilite, for the thread-like fibres formed by the grating process, which are left unchanged in form and aspect after exhaustion by ether, have lost little or nothing of their springiness, though possibly somewhat of their strength. Of course, before ultimate analyses are made, this oily constituent must first be extracted. It constitutes 4·17 per cent. by weight of the mineral, and is itself probably not altogether homogeneous in constitution. It penetrates paper, making permanent, translucent stains, like an oil.

The above behavior of wurtzilite distinguishes it widely from the so-called "elaterites," or certainly from the Derbyshire varieties. Hatchett describes the portion of these soluble in ether as a "yellowish-brown bitumen," and Johnston also describes *his* ether extract as being a *solid* material.

2. *The Action of Nitric Acid.*—We have here, for the Derbyshire mineral—subsequently called *elaterite* by Hausmann *et al*—the testimony of an authority no less eminent than Klaproth, that boiling, fuming nitric acid has no appreciable effect thereon. Wurtzilite, on the other hand, is quite readily acted on, and dissolved, at least in part, by ordinary nitric acid with heat. Effervescence, with evolution of red fumes, appears. A deep brown solution is formed; a soft, translucent brown magma remaining. This latter is semi-solid while immersed in the hot liquid, but solidifies on cooling. This magma, boiled in water till all acid has been removed, dries to a light chocolate-brown amorphous mass, which does not appear to be a *nitrated* product, because, though very combustible, it does not seem to burn with deflagration. This ready action of nitric acid, which, by the aid of some potassium chlorate, becomes complete—according to the valuable process of Storer—will enable the proportion of sulphur in wurtzilite to be easily determined. I have already ascertained *qualitatively*, in this way, the presence of this element. The brown nitric acid solution above mentioned becomes turbid on cooling, and water precipitates further a considerable amount of light-brown flocky material.

3. *Volatility.*—Johnston states that the "elastic bitumen" of Derbyshire, his No. 1 (*a* of Dana), "lost weight and an odorous volatile matter at 212 degrees Fahrenheit." Further, when his No. 2 (Dana's *b*) was boiled in water, "a volatile portion collected on the surface of the water and the sides of the flask," which became solid on cooling. I have in vain tried to obtain any such product from wurtzilite. There is a loss of weight on boiling the "fine-cut" in water, as is to be expected from the presence of the odorous and partially volatile oils disolved out, as above stated, by ether. Three hours of rapid boiling gave a loss of 1·582 per cent. A strong odor was manifest during the whole time of the boiling, but no trace of any condensed material appeared in any part of the apparatus.

4. *Fusibility.*—Hausmann states that the Derbyshire "elaterite" is "easily fusible;" but Klaproth states that it is fusible "at light heat." He says, also, that after fusion at such high heat, it retains its (india-rubber-like) elasticity, and, very singularly, allows itself to be drawn into threads between the fingers. Wurtzilite cannot be fused under atmospheric pressure without first beginning to decompose, but when confined under some pressure there follows a distinct indication of fusion.

5. *Hardness.*—Professor Blake attributes to wurtzilite a remarkable degree of hardness, equal at least to that of cannel coal. As to the Derbyshire mineral, Hatchett states that some varieties are "soft," others are "very soft," others are "hard," still others are "very hard." It appears probable, however, that these terms are relative only as used by him. His hard and very hard kinds are those which, as he words it, "resemble asphaltum in luster, color, and fracture," and his very hard kind is "brittle," and with the characters of asphalt complete. Klaproth states that the Derbyshire mineral is "soft." Hausmann states that it is "very soft." Johnston says that his variety 1 (called *a* by Dana) is "soft;" his 2 (*b* of Dana) closely resembles "moderately soft india rubber;" his 3 (*c* of Dana) is described by him as "brittle." The hardness which Professor Blake points out in wurtzilite could scarcely have occurred in any of the Derbyshire specimens without being noted, and having some special stress attached to it, by one or more of the eminent mineralogists whose names occur above.

The specific gravity of wurtzilite—in view of the exceptional homogeneity it shows in its fracture, transparency and other characters—is a matter of unusual interest. I have, therefore, made repeated determinations, on different samples and by differing methods, with great care:

	Results.
1. On 6·4893 grams in pure water	1·0265
2. On 1·8781 grams in pure alcohol	1·022
3. On 13·4463 grams in pure water	1·0236
4. On 14·0172 grams in pure water	1·0226
5. On 10·8072 grams, first washed with pure alcohol (to detach air), which was then displaced by a prolonged current of pure water through the specific gravity bottle	1·0227

Of these figures I prefer No. 5, which is also the exact mean of Nos. 2, 3, 4 and 5 (rejecting the first one as too far from the mean).

Fusion Point.—Some preliminary attempts at approximate determinations of this were made by some novel devices of my own, among them immersion of the "fine-cut" product described above in certain other materials of high and known fusing and boiling points while these were in fusion and ebullition. Among other curious results, I will now mention only the following:

Hard, white paraffine, of a boiling point at least up to 600 degrees F., was brought to ebullition, and some of the thread-like wurtzilite shavings stirred into it. They remained undissolved, and on cooling the solid paraffine was found to be unaltered in color, consistency and transparency, the threads of wurtzilite imbedded therein showing also under a strong magnifier no appreciable alteration in form or in any other respect. Substitution of ozocerite for the paraffine gave like results.

A similar experiment made with boiling *sulphur* (which boils a little above 800 degrees F.) gave a mass in which the imbedded threads remained likewise visible after solidification, little or no change of any sort being apparent.

These experiments prove not only a fusing point for this extraordinary carbohydrogen mineral above 448 degrees C. = 806½ degrees F., but also a total insolubility and indifference towards boiling paraffine, and even (for a time at least) towards boiling sulphur at 800 degrees F.

NEW YORK, Jan. 13, 1890. HENRY WURTZ, Ph. D.

PIG IRON AND SILVER CERTIFICATES.

The following are the views of two prominent papers.

The Secretary of the Treasury has recommended that the government buy up silver bullion, at the market price, store it away in warehouses, and issue silver certificates based on and according to the market value of the silver so accumulated. This recommendation seems to be a very temperate result of the clamors set up by silver millionaires, to procure a market for their output and appreciate its value. Looking solely at the principle involved in this scheme, we are at a loss to see why pig iron should not come within the same form of government favor. There would really be greater reason for selecting iron as a basis of currency, for that article is more closely connected with the life, happiness and progress of the people. It is, also, the basis of our greatest activity. If the government has a blessing to bestow, why not upon the great iron industry? Why not in sympathy with homes, labor, education, progress rather than in devotion to a miserable financial fetich? If the Nation needs more money than it has (a proposition we do not discuss now) there is reason why iron should be made the basis rather than silver. It is just as sensible. Figure a little: 1,000,000 ounces of silver at 80 cents an ounce will make about $1,100,000, there being 72 cents' worth of silver in a dollar; 50,000 tons of pig-iron at $20 a ton will make $7,000,000. It is the same problem in either case, and involving the same principle. Why not take the iron as the basis? Every iron region where thousands and thousands of men make their living wants to know why their product is not encouraged, by the way of a basis for a paper medium of exchange rather than the inconsequential output of the bonanza monopolists. It is not a question as to character of metals; only as to their worth as a foundation for paper currency. Again, expensive vaults and buildings need not be built for the iron metal as is required for the silver metal. The iron can be piled up in yards, and is safe—safe in itself and safe for all. We propose, Mr. Windom, that you send a supplementary message to Congress, and do away with your discrimination against pig-iron.—*Ironton (O.) Register.*

Here is a wide field in which to develop the peculiar ideas of the American Pig Iron Storage Warrant Company. Why cannot Secretary Windom and the able gentlemen of the above company join forces and evolve a scheme for issuing pig-iron certificates which shall pass for currency. We fancy they are not very far apart in their ideas.—*Iron Trade Review.*

Asbestus-mining in Canada.—Mining is carried on by cutting down the hills of asbestus-bearing serpentine, much as a farmer cuts down a stack of hay or straw, or by open quarrying on the level. The rock is blasted out, and the asbestus, separated from the containing rock, is "cobbed"—*i. e.*, separated by hammering from adhering foreign matter. This "cobbing" is a comparatively easy matter in the case of the finer quality, as it usually separates readily from the gangue, but in the lower grades much difficulty is experienced in separating the fibrous matter from the non-fibrous. At best there is great waste. Much of the asbestus is in thin or narrow veins, and is wasted, as by the present mode of operating it does not pay to separate this from the serpentine. A machine that will enable these narrow veins to be utilized is a desideratum.

When "cobbed," the asbestus is graded according to purity, color and length of fiber into three grades and bagged for shipment. The finest quality or "firsts" finds ready sale at prices ranging from $80 to $110 per ton; "seconds" fetch from $50 to $70 per ton; while "thirds" may be valued at $13 to $15 per ton. In good mines the yield of asbestus is from three to five per cent. of the rock quarried, and the cost of mining may be put down at $25 to $30 per ton. Returns obtained by the Geological Survey of Canada show that, for the year 1888, Canada's output was 4,404 tons, valued at the mines at $255,000, and this the output of nine different mines. Over three fourths of the whole was shipped to the United States; small quantities going to Great Britain, Germany, France, Belgium and Italy, and being used in domestic manufacturing.—*From Canadian Asbestus, by Prof. J. T. Donald, in the Popular Science Monthly for February.*

From the returns courteously furnished us by the manager of the Quebec Central Railway, the production of asbestus for 1889 and shipped by that company was 5,956$\frac{1758}{2000}$ tons.—[ED. ENG. AND MIN. JOURNAL.]

ALUMINUM IN CAST IRON.*

This paper is prepared to substantiate the statements made by us in a paper upon the same subject last year,† and to present the chemical analyses of the test bars belonging to the series of casts reported in that paper.

When referring to a vertical column, we shall indicate such vertical column by the test number at its top. In all tables in this paper the tests 363 to 367 and 368 to 375 are those of the first paper reproduced.

Table IV. shows both the calculated aluminum and silicon contents of each test, and the percentages actually found by analysis.

Table V. exhibits graphically the total carbons, the graphitic and the combined carbons in the white iron and aluminum series, as well as the same carbons found in the comparison and remelt series of our first paper. Table VI. gives the same carbons for the F. M and aluminum series, and its remelt comparison series.

In both these tables the heavy full line in the diagrams at the top of the table gives the total carbons in the aluminum series, while the full light line shows the total carbons of the remelt series.

In the next lower diagram the full heavy line indicates the graphite in each cast with aluminum, while the heavy broken line exhibits the graphite in the remelts.

The combined carbons of the aluminum series are shown by the full light line, and those of the remelts by the light broken line in the lower part of the tables. Referring to Tables II. and VII., test 367 represents the last cast of the white aluminum series, in which aluminum contents of one per cent. was aimed at, but which actually contained 1¼ per cent. Before receiving the results of these analyses we made the remainder of the tests of Table VII. to prove the preceding results. As test 367 was made up of white cast iron and Cowles ferro-aluminum, we first determined whether a cast made of white iron and Cowles' metal, proportioned to give one per cent. of aluminum, would give the same results in a new and independent heat, and whether our previous method of a comparison series was correct. The result of this experiment is shown in test 473, and is such as to be almost equal to a chemical analysis, proving all that we stated in our first paper, and that the comparison series was unnecessary. The next question is to ascertain to what extent this result is due to one per cent. of aluminum or to the ⅛ of one per cent. of silicon which was introduced with the aluminum by the use of the Cowles metal. To do this we found a pig iron containing nearly the same (3·64 per cent.) silicon as the Cowles metal (3·86 per cent) and about the same carbons. To the same white base as before we added enough of this pig to bring the silicon to about ½ per cent., this being the amount supposed to have been in test 367. This cast is shown in 471, and to make comparison convenient we have preceded this test by 363.

We also made another test, 469, with the same white cast iron and commercially pure aluminum, to show the effect of the one per cent. aluminum.

The next question was whether the combination found in the Cowles ferro-aluminum was superior to aluminum and silicon and carbon brought together from other sources. To determine this, cast 472 was made, using the same white cast iron, introducing silicon and carbon by the pig iron used in cast 471, and adding the aluminum furnished by Messrs. White & Son. This cast should be almost identical in composition with 473; and the record shows it to be so. We made two more casts, one 468 with three-quarters per cent. aluminum, using the same metals as in cast 469; the other, 470, a remelt of the material left after casts 468 and 469.

INFLUENCE OF ALUMINUM UPON THE GRAIN OF CAST IRON.

We present this portion of our subject at this stage because the object of "Keep's Test" is to present to the eye both the physical and chemical peculiarities of the iron. The appearance of the fracture is a strong indication of the character of the metal, and one of the advantages in using a bar half an inch square is that it, more than any other size, shows by the change of grain the effect of varying constitution. A smaller bar chills so quickly that it does not give an element sufficient time to exert its influence, while a larger bar holds its heat so long that any tendency toward a white grain is more or less overcome. The grain of the fractures of our tests is shown in Tables II. and III., and represents each test with aluminum recorded in Tables VII. and VIII. We began our white series with the cast of a white iron 363, which gave us castings full of blow holes. The area of the bar is so lessened by these holes as to give very low results.

Test 364 is the same white pig iron, with enough of the Cowles ferro-aluminum added to bring the aluminum up to ·25 per cent. The result is a more even grain, with absolutely no blow holes. With a glass magnifying 20 diameters, it seems as though minute black grains could be seen scattered throughout the otherwise white surface, and the latter itself seems to have a darker shade. The change in carbons which the analysis shows to have taken place might give a darker grain, and yet the graphite is in such minute grains and in such small quantity that it does not decrease shrinkage. In this cast the silicon also increased, and by so doing added to the hardness of the casting.

This test, 364, is the most important member of the series, for, with aluminum at its present price, it illustrates the effect of the use of this metal in foundry practice. It shows how, with a small percentage of aluminum and a little silicon, we can produce extremely hard and perfectly sound castings of white iron, and at the same time obtain the maximum strength.

In test 471 we obtained by an addition of silicon alone a casting nearly as sound but not so strong, especially in its resistance to shock. With silicon at about ·20 and aluminum ·25 per cent., we have in test 364 a perfectly homogeneous white grain.

In another test reported in our first paper we produced perfectly sound castings with $\frac{1}{15}$ per cent. aluminum, its resistance to weight being 545 pounds and to impact 254 pounds.

By bringing the aluminum up to ½ of 1 per cent. in test 365, enough carbon has been driven from the combined to the graphitic form to make the fracture gray at the middle of the bar. In Table II. this central cross-fracture is shown by the square figure at the left of the table. (In Table III. at the bottom). The percentage of aluminum and the test number are shown at the left of this cross-section. The same bar is shown flatways at the right of this cross-section. All of the square bars are cast with both ends against a chill, the chilled end of the bar being placed in these illustrations next to the cross-section. The latter is the fracture at the middle of the bar 6 inches from each chilled end. In the longitudinal representation of the bars, only enough of the length is shown to indicate the changes of grain. The grain of the chilled end of the bar is shown by splitting off the side of the bar.

In test 366, with ⅜ of 1 per cent. of aluminum, the cross-fracture is decidedly gray, and the long fracture shows that the gray of the cross-fracture grows less and less until hardly any gray remains. The measure of the white portion of the long fracture shows the depth of chill.

In tests 363, 364 and 365 all or nearly all of the bar was white, so that no measure of the depth of the chill could be made. In 366 enough of the bar is gray to allow the depth of chill to be measured.

In test 367, with 1¼ per cent. of aluminum, the fracture is quite dark, and the chill has diminished to a depth of half an inch.

This completes the original white series.

The next test, 473, was made to prove 367. The result is the same as

Table I.

CALCULATED				ACTUAL PERCENTAGE FOUND IN TEST BARS										
NO. OF TEST	ALUMINUM	SILICON	SILICON FOR ACTUAL AL.	ALUMINUM	SILICON	TOTAL CARBON	GRAPHITE	COMB'D CARBON	NO. OF TEST	SILICON	TOTAL CARBON	GRAPHITE	COMB'D CARBON
WHITE BASE IRON AND ALUMINUM									WHITE REMELTS				
PIG	.00	.186	.18	.00	.186	2.98	.95	2.03	PIG	.186	2.98	.95	2.03
363	.00	.18	.18	.00	.08	2.98	1.27	1.71	376	.25	3.13	1.62	1.51
364	.25	.26	.27	.25			1.37		377		2.97	2.14	.83
365	.50	.35	.36	.54		2.84	1.35	1.49	378		3.12	1.53	1.59
366	.75	.43	.47	.59		3.10	1.81	1.29	379		2.75	1.83	.92
367	1.00	.52	.62	1.28	.62	2.90	1.71	1.19	380	.12		1.57	
									381	.12	2.52	1.44	1.08
FLM GRAY IRON AND ALUMINUM									FLM REMELTS				
PIG	.00	1.25	1.25	.00	1.249	3.55	3.22	.33	PIG	1.249	3.55	3.22	.33
368	.00	1.25	1.25	.00	1.245	3.41	2.26	1.15	382	1.160	3.97	2.81	1.16
369	.25	1.33	1.28	.10		4.09	2.72	1.37	383		2.61	2.37	.24
370	.50	1.41	1.29	.14		3.55	2.66	.89	384		3.86	2.98	.88
371	.75	1.50	1.37	.32		3.53	2.78	.75	385		3.57	2.60	.97
372	1.00	1.58	1.50	.75		3.45	2.56	.89	386		3.65	2.77	.88
373	2.00	1.92	1.75	1.50		3.58	2.50	1.08	387		3.37	2.32	1.05
374	3.00	2.26	1.99	2.23		3.34	2.76	.58	388		3.72	2.49	1.23
375	4.00	2.70	2.54	3.84	2.230	3.10	2.44	.66	389	.978	3.53	1.82	1.71

Engr'd by American Bank Note Co. N.Y.

367, except that the chill is deeper. If this test were placed between 367 and 366, it would exactly fill the place of a one per cent. metal.

The next three tests were made for the purpose of segregating the effect of the aluminum from that of the silicon.

In test 471 we introduced into the white iron the same proportion of silicon and carbon as we did in 473. The white, 363, was full of blow holes, while 471 was solid, and the grain seemed exactly like 364.

We next made test 472 to be an exact duplicate of 473, but it was made up of 471, with enough commercial aluminum to bring the percentage up to one per cent. The result is a lighter-colored cross-fracture than 473, but the chill is not so deep. Considering the fact that in 472 the mixture could not be nearly as complete as in 473, we see the most conclusive proof that one per cent. of aluminum and one-half per cent. of silicon in such a white iron as we have used can be expected at all times to produce substantially the same results, and will turn a white porous iron into a solid gray casting.

The question now naturally presents itself whether the aluminum would produce a gray casting without the help of silicon.

Tests 469 and 468 were made to determine this. In test 469 we added to a crucible of melted white iron 1 per cent. of aluminum. This gave at the point of fracture a darker gray than test 472 or even 473, but the chill-fracture shows that the gray diminished rapidly towards the chill.

This may have been due to the fact that the silicon in cast 472 was acting throughout the whole time of melting, while in both 469 and 468 the aluminum was introduced just before the iron was poured. In test 473 both the silicon and aluminum were introduced cold with the iron, and both therefore acted during the whole time of melting and cooling.

Test 468 was intended to furnish a 1 per cent. cast exactly like 469, but analysis yielded only ·77 per cent. aluminum. The fracture is gray, and this cast, with no addition of silicon, would very nearly in every respect fill the ·75 per cent. place between 365 and 366.

We have thus proved that aluminum alone will turn combined carbon into graphite.

* Abstract of a paper by W. J. Keep, Detroit, Mich. Analyses by C. F. Mabery.—Transactions of the American Institute of Mining Engineers.

† "The Influence of Aluminum Upon Cast Iron." Read before the American Association for the Advancement of Science, at the August meeting, 1888, by W. J. Keep, of Detroit, Mich. Reprinted in full in ENGINEERING AND MINING JOURNAL, August 18th, 1888, with editorial.

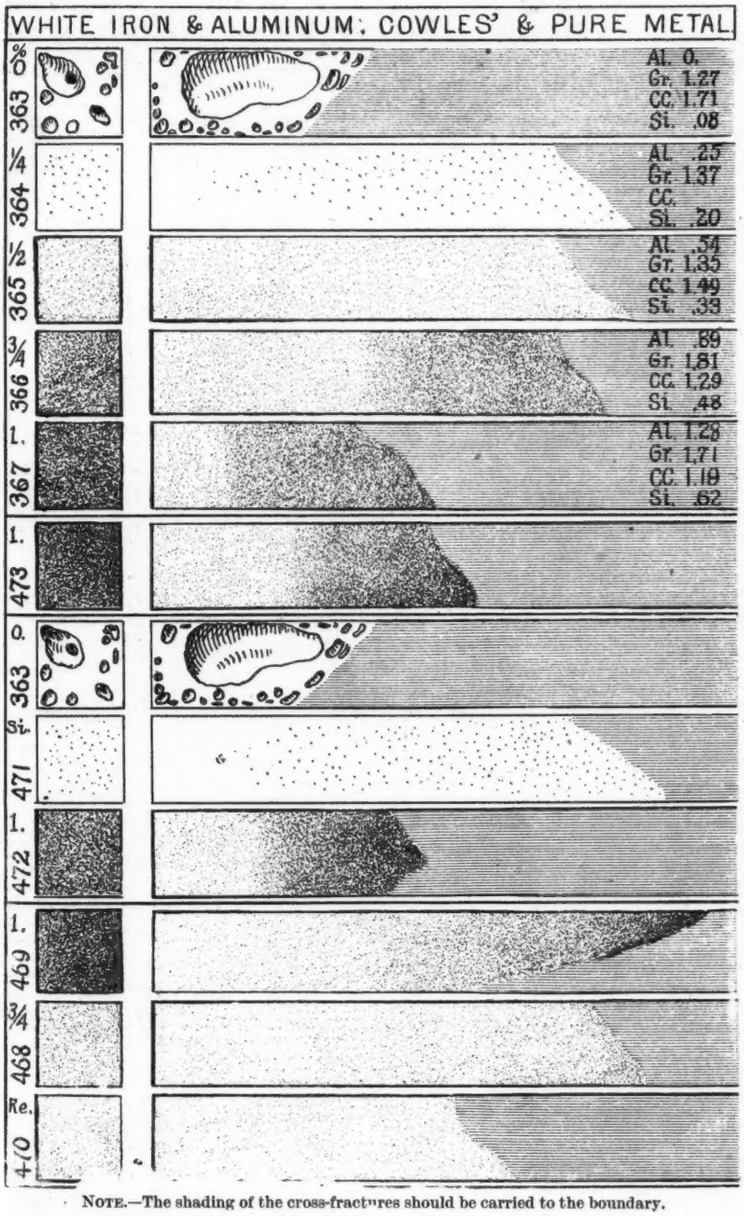
We believed that if we gave more time for the aluminum of tests 468 and 469 to act upon the carbon, the iron would be grayer. We therefore remelted together the sprues of these two casts in test 470. The result did not sustain this view, the casting being in grain almost exactly like 365.

Table III. indicates the action of higher percentages of silicon and aluminum than is shown by the tests in Table II. The iron of test 368 contains no aluminum, but carries 1¼ per cent. of silicon. The cross-fracture is a beautiful gray, as the silicon was introduced in the blast furnace under the most favorable conditions for producing gray iron. In the casting the chill is $\frac{6}{10}$ of an inch deep. The first addition of the Cowles metal took out more than half the chill, and slightly darkened the fracture.

The next three additions, 370, 371 and 372, reduce the chill to nearly nothing, but do not materially darken the fracture. In 373 the chil nearly disappears, and in the last two it is all gone.

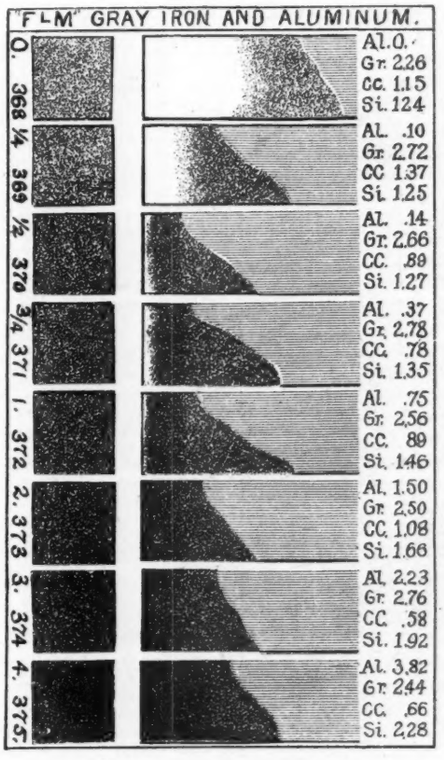
A noticeable effect on the grain is the dark color immediately back of the chill, the sudden cooling preventing the grains from assuming any size or grouping together.

Table II.



NOTE.—The shading of the cross-fractures should be carried to the boundary.

Table III.



ANALYTICAL DETERMINATION OF ALUMINUM AND SILICON.

Having proved the correctness of the assertions which we made in our first paper by proof tests, we will now present the determinations of aluminum and silicon in the test bars of our first series. We give these results and other data graphically in Table IV. and in tabular form in Table I. To explain the lack of uniformity in these determinations, we found it impossible to make the composition of the separate melts correspond exactly to the calculated percentage of any element.

GENERAL REVIEW OF CHEMICAL AND PHYSICAL TESTS.

The Relation Between Carbon Contents and Strength.—Taking the FLM series, the pig contained 3·20 per cent. graphite and only 0·33 per cent. of combined carbon. On remelting (test 368) the loss in silicon is practically nothing, yet the carbons are 2·26 per cent. graphite and 1·15 combined carbon. The remelting temperature was probably lower than that of the blast furnace, and the size of our bars was less than that of the pig. This gave less time to the graphite in our bars to separate.

As all tests are made at the temperature of our furnace, the carbons of this first heat are those of the original pig cast under the conditions attending our tests. Taking the FLM aluminum series as a whole, we see that combined carbon decreases rapidly as compared with the first melt. Graphite which stood at 2·26 per cent. at the first heat (368) ran up to 2·78 with ¾ per cent. aluminum (371) and afterwards diminished rapidly with each heat, but not so rapidly as combined carbons decreased. The reason is that the total carbon has decreased very rapidly as the tests progressed. By taking this into account, we see that the proportion of graphite to combined carbon has increased as aluminum increased. This proves that aluminum converts combined carbon into the graphitic form while the metal is still melted, and that much carbon has risen to the surface during each melting and thus been lost. The increasing blackness of the fracture of each cast also shows that as the temperature lowers graphite continues constantly to be formed. Aluminum thus drives carbon out of cast iron. An examination of carbons of the remelt series of FLM shows that the effects on the carbon are exactly the opposite to those in the FLM aluminum series. In the remelt series graphite decreased while combined carbon increased, and total carbon remained substantially the same as in the original pig. The silicon introduced with the aluminum also drove out carbon, but the chief expulsive action was that due to the aluminum.

We stated that if the casting was sound and not too brittle the less graphite the more strength. The carbon results show that this is not only true, but that a throwing out of graphite from the melted iron and consequent decrease in the total carbon add to strength. Any treatment

therefore that will decrease the total carbon will be likely to strengthen the iron.

We have in another paper* shown that while silicon will act in the same manner upon carbon, yet by its own weakening effect it impairs the strength of the iron, as it increases in amount more than the decrease of carbon strengthens it. From the results of our experiments we are led to believe that the aluminum of itself does not add to the strength of the cast iron into which it is introduced.

Aluminum, through its influence on carbon, seems to indirectly increase the strength of cast iron. It will be noticed in the tests which we have reported that the strength increases as total carbon decreases, and this is in spite of the cutting up of the mass by the increasing proportion of imprisoned graphite. The white series with the aluminum also corroborates this. Combined carbon decreases very rapidly, and graphite increases as rapidly with the aluminum.

These series, with the new tests presented in this paper and the actual determinations of carbon, prove that aluminum (in these series aided somewhat by silicon) produces these changes in carbon.

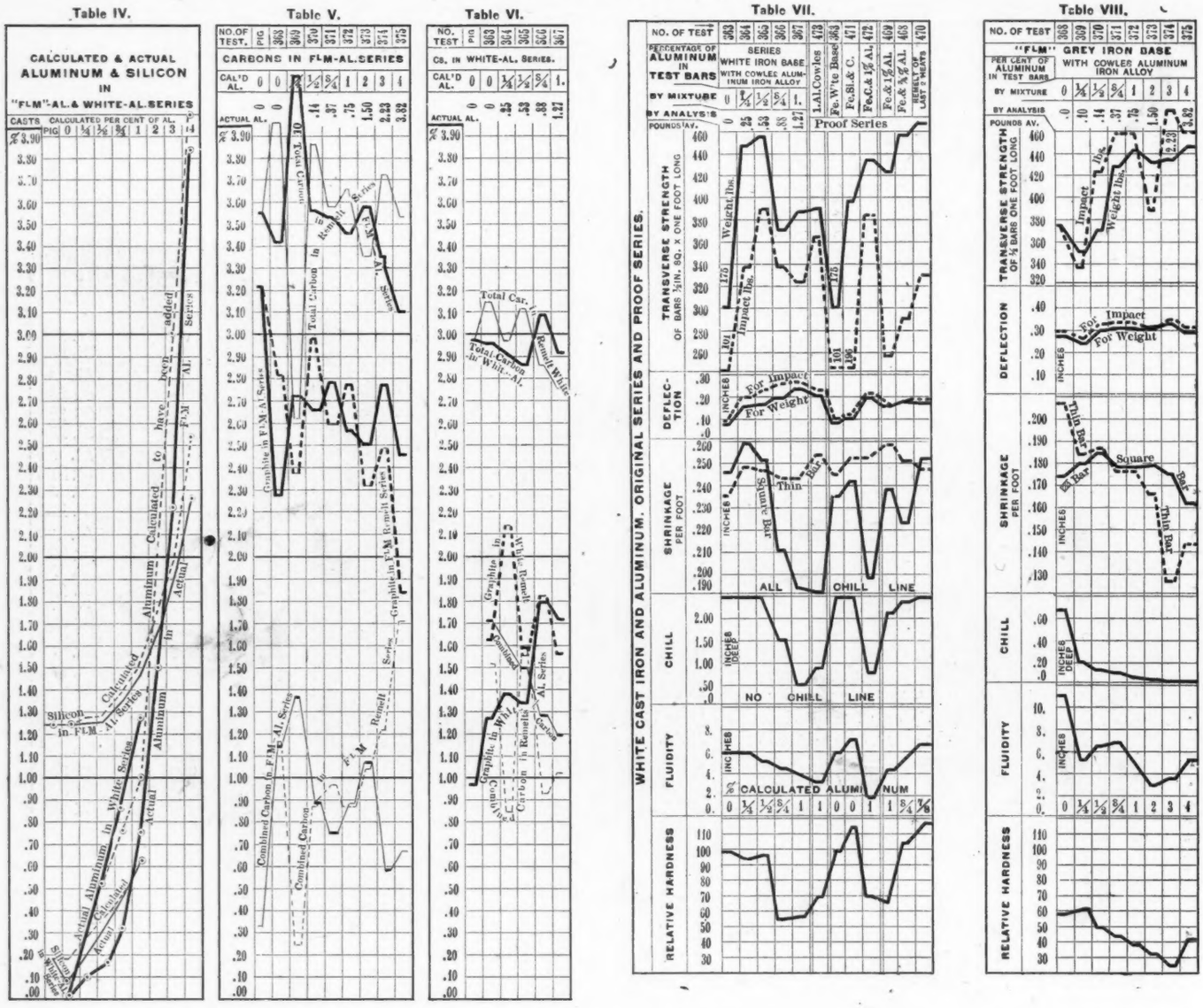
We began with a white iron that produced castings full of blow holes, and therefore weak from that cause. The strength of the one-quarter and one-half per cent. casts was due to the fact that the casting was solid. The iron was low in carbon to begin with, and consequently the iron was not fluid. This prevented the carbon from escaping to the surface, and caused the total carbon to remain practically the same throughout the series. Since, therefore, it did not gain in strength from a decrease of total carbon, and since the proportion of graphite was greater, the iron was necessarily weakened in subsequent heats. Neither of these series should have been compared with the remelt series, because in the latter the blow holes increased with each melt. The growing weakness was due to this cause. We have proved also by the direct melt 473 in Table VII., as compared with the last melt of the series (367), that each member of the series should be viewed alone, or compared with the first cast without aluminum (363), and with the other members of its own series. We also see from this record that in this series all variation in strength can be traced to the variation in quantity and condition of the carbon. This white series proves better than the FLM series that aluminum changes combined carbon into graphite, and thus prevents brittleness, and tends to produce sound castings.

Deflection.—This is not dependent upon the total carbon. It varies directly as the graphite, and inversely as the combined carbon.

Chill.—The chill increases in depth as combined carbon increases and as graphite diminishes. The FLM pig, the analysis of which showed little combined carbon, had a very dark, even fracture, and the thinnest edges of the pig were as dark as the heavy portions. The changes produced by remelting (368) illustrate the tendency of the carbon to the combined state. Eight remeltings turned the iron white on account of this natural tendency, and not from a decrease of silicon, for in the first remelting there was no change in silicon. The noticeable thing is that the addition to FLM of from $\frac{1}{16}$ to $\frac{1}{4}$ of 1 per cent. of aluminum increases the graphite to such an extent, and in such a way, that the iron loses its tendency to chill. The 3 and 4 per cent. melts have absolutely no chill. Silicon will not take out all tendency to chill.

Shrinkage.—This decreases as combined carbon is lowered. We have found that when aluminum is added in small quantities shrinkage increases perceptibly. This is apparent in both of these experimental series. Aluminum in itself, when combined with carbon in cast iron, probably exerts some influence towards increasing shrinkage, but the carbon soon changes into graphite to such an extent that such tendency to shrink (if it exists) is overcome, and shrinkage is thus indirectly reduced by aluminum.

Relative Hardness.—This was determined by a Turner machine. In the paper on the "Influence of Silicon," to which we have before referred, it was shown that in those series of tests hardness increased with the combined carbon and with the silicon, except during the period when the softening, brought about by the changing of combined carbon into graphite through the influence of silicon, more than counteracted the hardening effect of the silicon itself. Thus far the indication is that aluminum of itself hardens cast iron. An examination of the shrinkage record in a cast, when silicon had been increased or decreased, proved that shrinkage varied as the hardness. An examination of the shrinkage record of the tests recorded in this paper shows that hardness and shrinkage are very similar. The increase of shrinkage of the thin bar indicates hardness, even though in larger castings slower cooling leads to a separation of suf-

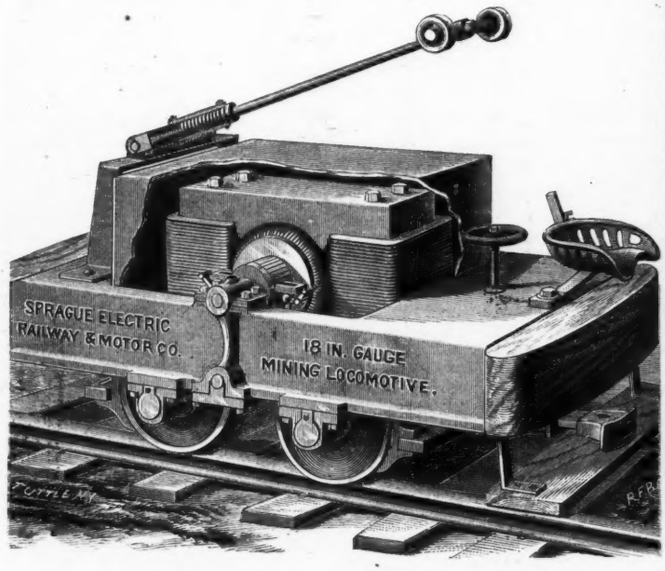


* "Silicon in Cast Iron," *Trans.*, vol. XVII., p. 683.

ficient graphite to cause the square bar to have a low shrinkage. An iron that will make thin castings with high shrinkage, and larger castings with a low shrinkage, will be found harder than when the shrinkage of the thin and thick are nearer together. The softest metal, where aluminum is the agent for changing carbon, is that where the thin castings shrink least.

By taking into account the shrinkages of both thin and square castings in each member of the proof series, it will be observed that hardness and shrinkage seem to be caused by the same elements. The Wellston pig, by which we endeavored to make the carbon and silicon the same as 473, was a gray iron. The white iron to which it was added had a hardness ranging from 60 to 100, yet the union of these two to bring the silicon up to ·54 per cent. does not seem to be sufficient to liberate graphite, and thus makes a casting combining a very high shrinkage with extreme hardness. The same mixture, melted under the same conditions, and charged with the same amount of aluminum (pure) as was contained in cast 473, made a casting (472) with low shrinkage and quite soft. The high shrinkage of the thin strip in casts 473 and 472 show that the combined carbon is not as low as in 367. These tests prove that during the time that aluminum is changing combined carbon into graphite it softens cast iron.

Fluidity.—It is not an easy matter to explain from the chart of carbons the decrease of fluidity produced by the introduction of aluminum. An extended use of aluminum as alloyed with cast iron indicates that the decrease is due to an effect upon the surface of the melted metal. As the metal containing aluminum flows through the mould, it seems to have a skin drawn in front of it. The Cowles 10 per cent. metal, if it contained no aluminum, would, no doubt, be an exceedingly fluid iron, but with its aluminum it cannot be run into castings as small as our thin test bars. The metal poured on a slab will solidify about half an inch thick with the sides round. When cold it has the appearance of being covered with a skin which it draws into wrinkles. The ordinary commercial aluminum cools in the same way, although it makes a sharp casting. This surface tension causes a tendency in large drops of the metal to solidify in spherical shapes. Whenever two currents of iron containing aluminum, however small in amount, come together in the mould, they are apt not to unite, but form "cold shuts."



ELECTRIC LOCOMOTIVE FOR METAL MINES.

ELECTRIC ROTARY DIAMOND DRILL.

SPRAGUE ELECTRIC ROTARY DIAMOND DRILL AND ELECTRIC LOCOMOTIVE FOR METAL MINES.

We illustrate in this issue a view of a new electric rotary diamond drill manufactured by the Sprague Electric Railway and Motor Company, of New York, which has shown very gratifying results in the tests to which it has been put, and which promises to achieve a success in this branch of electric mining. We also illustrate another special electric mining application, *i. e.*, the electric locomotive of the same company.

The former may be said to require no description, for its title of rotary indicates sufficiently its system of working, and the illustration gives a correct idea of its size and the manner in which it is operated by the miner.

A good electric mining drill has always been desired by miners, and this drill seems to meet all the requirements.

It is light, compact, simple and easy to operate. The motor is completely encased, so that it is impossible for dust, dirt or stray stones to lodge in the working parts. The whole drill is mounted on an adjustable frame, so that it can be very easily set in any position desired, or set at work at any part of the mine.

The current for operating the drill is supplied at a constant voltage or potential, the number of volts depending on the potential used for transmitting power throughout the mine. If lamps are needed, they can be supplied with current from the same wires which supply current to the drill, and when in such use are connected in multiple arc across the main current wires.

These drills are manufactured and sold by the Sprague Electric Railway and Motor Company, of New York, under patents granted to Mr. J. E. Storey. We understand that the Sprague Company are now at work on, and will soon be able to furnish, other special mining applications of electricity, among which is an electric percussion drill.

The electric locomotive is simple, powerful and compact, and is built with special reference to the arduous duties required of such a machine.

The gauge of the accompanying locomotive is 10 inches, but it can be accommodated to any gauge used in ordinary mining work. In order to protect the machine from damage, all the working parts are completely boxed in, as shown in the view.

The speed of the motor is under complete control by a switch which throws the winding of the field into different electrical combinations, thus varying the speed of the motor without the use of any wasteful resistance. The direction of rotation is also governed by the same switch, so that the operation of the motor is very simple, and it can be put in charge of an ordinary workman.

Any system of conveying the current from the dynamo to the locomotive can be used, either using the rails as one side of the circuit for the return of the current, or else employing a complete metallic circuit by the use of a double overhead trolley wire. In these cases, a trolley pole, not shown in the view, carrying at its upper end a trolley wheel for making running contact with the overhead wires, is attached on the rear of the locomotive car.

This mining locomotive is now being manufactured by the Sprague Electric Railway and Motor Company from designs made by Mr. J. E. Storey.

SECRETARY WINDOM'S SILVER BILL.

The following is the text of a bill prepared by Secretary Windom for presentation to Congress authorizing the issue of Treasury notes on deposits of silver bullion, in accordance with the plan proposed in his report to Congress:

Be it enacted by the Senate and House of Representatives of the United States in Congress assembled:

SECTION 1. That any owner of silver bullion, the product of the mines of the United States, or of ores smelted or refined in the United States, may deposit the same at any coinage mint or at any assay office in the United States that the Secretary of the Treasury may designate, and receive therefor Treasury notes hereinafter provided for, equal at the date of deposit to the net value of such silver at the market price, such price to be determined by the Secretary of the Treasury under rules and regulations prescribed, based upon the price current in the leading silver markets of the world, but no deposit consisting in whole or in part of silver bullion or foreign silver coins imported into this country, or bars resulting from melted or refined foreign silver coins, shall be received under the provisions of this act.

SEC. 2. That the Secretary of the Treasury shall cause to be prepared Treasury notes in such amounts as may be required for the purpose of the above section, and in such form and denominations as he may prescribe; provided, that no note shall be of a denomination less than $1 nor more $1,000.

SEC. 3. That the notes issued under this act shall be receivable for customs, taxes, and all public dues, and when received into the Treasury may be reissued, and such notes, when held by any national banking association, shall be counted as part of its lawful reserve.

SEC. 4. That the notes issued under the provisions of this act shall be redeemed upon demand at the Treasury of the United States or at the office of an Assistant Treasurer of the United States, by the issue of a certificate of deposit for the sum of the notes so presented, payable at one of the mints of the United States, in an amount of silver bullion equal in value on the date of said certificate to the number of dollars stated therein, at the market price of silver, to be determined as provided in Sec-

tion 1; or such notes may be redeemed in gold coin at the option of the Government; provided that upon demand of the holder such notes shall be redeemed in silver dollars.

SEC. 5. That when the market price of silver, as determined by the Secretary of the Treasury, shall exceed $1 for 371.25 grains of pure silver, it shall be the duty of the Secretary of the Treasury to refuse to receive deposits of silver bullion for the purposes of this act.

SEC. 6. That it shall be lawful for the Secretary of the Treasury, with the approval of the President of the United States, to suspend, temporarily, the receipt of silver bullion for Treasury notes at any time when he is satisfied that, through combinations or speculative manipulation of the market, the price of silver is arbitrary, nominal, or fictitious.

SEC. 7. That the silver bullion deposited under this act, represented by Treasury notes which have been redeemed in gold coin or in silver dollars, may be coined into standard silver dollars or any other denomination of silver coin now authorized by law for the purpose of replacing the coin used in the redemption of the notes.

SEC. 8. That so much of the act of Feb. 28, 1878, entitled "An act to authorize the coinage of the standard silver dollar and to restore its legal-tender character," as requires the monthly purchase and coinage into silver dollars of not less than $2,000,000 nor more than $4,000,000 worth of silver bullion is hereby repealed.

SEC. 9. That any gain or seigniorage arising from the coinage which may be executed under the provisions of this Act shall be accounted for and paid into the Treasury as provided by existing law.

SEC. 10. That silver bullion received under the provisions of this Act shall be subject to the requirements of existing law and the regulations of the Mint Service governing the methods of receipt, determining the amount of pure silver contained and the amount of charges or deductions, if any, to be made.

SEC. 11. That nothing in this Act shall be construed to prevent the purchase, from time to time, as may be required, of silver bullion for the subsidiary silver coinage.

SEC. 12. That a sum sufficient to carry out the provisions of this Act is hereby appropriated out of any money in the Treasury not otherwise appropriated.

SEC. 13. That all acts and parts of acts inconsistent with the provisions of this Act are hereby repealed.

SEC. 14. That this Act shall take effect 30 days from and after its passage.

THE VOLUMETRIC DETERMINATION OF ZINC.

The author, A. Voigt, suggests the following method for volumetric determination of zinc, which is much less tedious than Schaffner's method, now usually adopted, and which gives fairly accurate results, so that it is very suitable for everyday use in zinc works, even if it be not sufficiently exact for buying and selling upon.

The method depends upon the precipitation of the zinc from an ammoniacal solution by a standard solution of potassium ferrocyanide. The sample to be tested (blende, silicate, zinc ashes, etc.) is dissolved in hydrochloric acid, oxidized with a little nitric acid, and from 100 to 150 cc. of water are added. To this solution are then added from 5 to 10 grams of potassium tartrate, according to the quantity of iron in the sample, so as to keep the iron in solution. Ammonia is then added until the solution is just alkaline, a point which is easily observed by the change of color of the liquid from yellow to white, and the volume is made up with water to about 250 cc. A standard solution of potassium ferrocyanide is then run in from a graduated burette whilst the mixture is continuously stirred. The end of the precipitations of the zinc is recognized by taking out a drop and mixing it, on a white plate, with a drop of acetic acid; the first formation of Prussian-blue indicates the end of reaction.

The ferrocyanide solution is standardized by dissolving 46 grams of the pure commercial salt in water, and allowing the solution to stand for a few days, filtering off any deposit, and making up the volume to a litre; 12·461 grams of ZnO are then dissolved in hydrochloric acid, and made up to a litre; 10 cc. of this zinc solution are measured off in a pipette, diluted with about 150 cc. water, 5 grams of potassium tartrate and a few drops of ferric chloride added, and then ammonia added until the liquid is alkaline. The volume is then made up to about 250 cc., as in the case of the samples, and the solution is titrated, making use of a drop of acetic acid on a white plate to bring out the Prussian-blue reaction. Ten cc. of the ferrocyanide solutions should be required for 10 cc. of the zinc solution, or 1 cc. of standard ferrocyanide solutions equals 1 per cent. of zinc.

Manganese interferes with the accuracy of the test, but the presence of laed is of no consequence. A number of determinations are given, and, compared with results by the Schaffner method, showing a fairly close agreement.—*Journ. Soc. Chem Ind.*

The Panama Canal.—The commission of French engineers under the presidency of M. Germain is now engaged on the isthmus in making an investigation into the state of the canal.

THE HALE PAVEMENT.

This pavement is constructed in the following manner: The grade having been properly reduced and dressed to the required shape, the ground should be covered with a layer of loose sand a few inches in thickness, to form a more perfect bed for the boards to follow, and to keep the boards from contact with the earth beneath to form a subdrainage, as against the effects of freezing weather. The sand can be struck off to a perfect surface by a moving templet made to suit the desired curve, and guided by slats set to grade stakes. The boards to be used need not be more than 1 inch in thickness, and ought not be less than 10 inches in width, as a rule. The best timber for the purpore is that least subject to rot under the circumstances. Good white oak has been used successfully. The boards should be dipped in hot coal-tar or other preserving material. They are then carefully laid upon the sand bed—lengthwise with the street would be the most convenient way—from curb to curb, with a regular curve all the way. No gutters are necessary, except such as are formed by the crown of the pavement. This floor—the broad surfaces of the boards bridging over all minor irregularities of the grading, and so widely distributing all weights or pressure, and being so perfect a barrier from anything solid passing from above or below—now forms a most complete and perfect foundation for the hard material to follow. It is best to cover the boards with a layer of loose sand an inch or two inches in thickness, to form a more perfect bed for the bricks, which can be struck off with the moving templet, as done before. The bricks—hard-burned—are now laid down. If they are of the ordinary shape of building bricks now in common use, they should be placed on edge and laid, preferably, "herring-bone" style, by which means all joints in the board floor are straddled. The seams are now well filled with sand, swept in, and the bricks settled in their beds with a flatter, well rammed, or rolled with a heavy roller. In cities having very heavy traffic to follow immediately the laying of the pavement, it is sometimes preferred, after the interstices between the bricks are half filled with fine sand, to complete the filling with hot pitch made by boiling gas tar until the more volatile portions are driven off. This, when it cools, makes the pavement at once impervious to water, cements the bricks together and helps to hold them firmly in place. This is generally advisable wherever clean fine sand cannot be obtained to fill the interstices.

HALE PATENT PAVEMENT.

A perceptible elasticity tends to favor the bricks when subjected to a crushing weight. The bricks being now in place, their flat surfaces agreeing with each other and with the flat surface of the boards beneath, the bearings are perfect and equal; they can be broken only with difficulty, and cannot get out of place; and if at any time it is desired to lay pipes or sewers beneath the pavement, the materials, being all disconnected, can be rapidly taken up and laid aside, and as rapidly replaced at small expense, no new materials being required, and no patching to be done, everything fitting in its place.

Its durability has been proved by the test of several years of hard service in the streets of the city of Charleston, and the following tests of the "crushing strength" of the Hale bricks would seem to indicate that no paving material surpasses them in enduring qualities. Report of mechanical tests, made with the United States testing machine (capacity 800,000 pounds), for the Hale Pavement Company. Tests, by compression, of four hard-burnt bricks.

The compressed surfaces were faced with plaster of Paris, to secure even bearing in the testing machine.

Test Numbers.	Width. inches.	Compressed Surface.		Sectional area; sq. inches.	First crack; pounds.	Crushing Strength.	
		Length; inches.	Thickness; inches.			Total; pounds.	Lbs. per sq. inch.
4,394	3·60	7·42	2·13	15·80	36,500	111,200	7,038
4,395	3·55	7·53	2·17	16·34	45,500	89,200	5,459
4,396	3·55	7·48	2·14	16·01	27,000	66,300	4,141
4,397	3·45	7·43	2·11	15·68	36,500	64,600	4,120

The development of cracks continued after their first appearance up to the time the maximum loads were reached.

The failures of numbers 4,396 and 4,397 notably occurred in detail; the bricks flaking off from one side. Signed, F. H. PARKER, Major Ordnance Department, U. S. A.

The cost of the Hale pavement in any given locality depends upon the cost of sand, oak or other durable boards, hard-burned brick, gas tar and common labor at such locality; but it is claimed that it can be laid in any city or town in the United States, having length of streets sufficient to warrant the undertaking, for very much less than asphalt or Belgian granite blocks, and in most places for less than well laid wooden blocks, or even good Macadam roadways. The royalty charge is 10 cents per square yard. Estimates of the cost of this pavement per square yard for any locality will be furnished on application by letter to the office of the company, Staunton, Va.

ANNUAL FINANCIAL STATEMENTS.

The following statements, taken from affidavits filed with the County Clerk, and therefore official, show the financial standing of mining companies organized under the laws of New York State. Bankers, brokers, investors, and all who deal in, or are interested in, mining stocks will find this list very valuable for reference. This list has been especially prepared for the ENGINEERING AND MINING JOURNAL, and can not be obtained elsewhere. It should be remembered that the statements from which these figures are taken simply assert that the indebtedness "does not exceed" the amounts mentioned.

Companies.	*Indebtedness.*
Alexandria Mica Co	$15,500
American Copper Mg. Co	80,000
American Flag Gold Mg. Co	5,000
American Oil Co	1,630,000
American Mg. & Milling Co	2,500
Arroyo Seco Gold Mg. Co	23,824
Austin Cons. Coal Co	100.000
Atwood Mining Co	51,000
Barcelona Mg. Co	1,500
Batopilas Mining Co	900,000
Bessemer Mining Co	15,000
Bloomingdale Graphite Co	25,000
Bonanza & Union Tunnel and Mg. Co	20,000
Branchville Ore Milling Co	18,000
Breckenridge Milling Co., Colo	5,000
Cagle Gold Mg. Co	871
Campano Mining Co	12,000
Campbell Mg. & Red. Co	100,000
Central American Syndicate Co., Honduras	12,000
Chase Gold Mg. Co	96,630
Chestatee Gold Co., Ga	49,500
Chicago & Georgia Mining Co., Ga	11,300
Chrysolite Silver Mg. Co., Colo	10,000
Codorus Mg. Co	250,000
Colonias Mining Co	111,000
Colorado Central Cons. Mg. Co	12,000
Consolidated Excursion Mg. Co	50,000
Consolidated Gold Mg. Co., of Georgia	24,800
Deadwood Terra Mg. Co., Dak	100,000
Evening Star Mg. Co., Colo	500
First National Gold Mg. Co., of N. Y. & Colorado	86,382
Gold Cliff Gold Mg. Co	350,000
Goldsmith Mg. Co	68,000
Good Return Mg. Co	440
Goodwin Cons. Mg. Co	20,000
Gowan Mg. Co., Arizona	20,000
Granite Mt. Cons. Mg. Co	57,156
Guadalupana Mg. & Milling Co	6,000
Guanajuato Concentrating & Reducing Co	10,000
Guayabillas Mg. Co., Honduras	250,000
Hancock Coal Co	2,000
Harney Peak Tin Mg., Mill. & Mfg. Co., Dakota	140,000
Hibernia Iron Mg. Co	500
Idaho Mg. & Irrig. Co	150,000
International Phosphate Co	31,000
Iron Silver Mg. Co., Colo	5,000
Jocuistita Mg. Co	80,000
Juniper Gold Mg. Co	8,000
Kearsarge Silver Mg. Co	3,500
Kismet Cons. Mg. Co	25,000
Leadville Cons. Mg. Co	1,105
Lebanon Mg. Co. of N. Y	50,000
Los Angeles Gold Mg., Land & Water Co	10,000
Maid of the Mist Silver Mg. Co	7,187
Magnetic Iron Ore Co	240,000
Magnolia Anti-Friction Metal Co	7,000
Manganese Iron Ore Co	75,000
Marshall Basin Mg. Co	10,500
May Mining Co	3,200
Mercer Mg. Co	25,000
Meridian Mg. & Mill. Co	2,500
Mexico Campbell Reduction Co	20,000
Midland Mg. Co	7,000
Mike & Starr G. & S. Mg. Co	100,000
Milo Cons. Mg. & Sm. Co	10,200
Mimbres Con. Mg. Co	27,232
Moreno Valley Gold Gravel Mg. Co	95,000
Mumford Mg. Co	100
‡Navassa Phosphate Co	212,000
Negaunee Concentrating Co	50,000
New England Gold & Silver Mg. Co	1,000
New River Mineral Co	450,000
Nichols Mining Co	18,000
Old Furnace Mine Co	60,000
Ophir Gold Mining Co., Colorado	400,000
Phillips Petroleum Co	500
Phœnix Lead Co	7,000
Phœnix Mg. Co. of N. Y	20,000
Plumas Cons. Mining Co	5,500
Plymouth Consolidated Gold Mg. Co	10,000
Rappahannock Gold Mg. Co	35,000
Red Bird Consolidated Mg. Co	15,000
Republic Gold Mg. Co	80,336
Resumption Mg. & Smelt. Co	100,000
Robinson Cons. Mg. Co	2,500
San Carlos Mg. Co	61,795
Santa Juliana Mg. Co	100,000
Santa Lucia Mg. and Mill. Co	*160,000
Santiago Gold Mg. Co	25,000
Silver Islet Cons. Mg. & Lands Co	150,000
South Yuba Water & Mg. Co	*275,000
Stevens & Deaver Gold Co	5,000
Sultepec Mining Co	†89,913
Sweetwater Mining Co	150,000
Terrible Mg. Co	10,000
Turkey Creek Mining Co	17,000
Uinta Coal Co	75,000
United Verde Copper Co	4,000
Virginia Gold Mg. Co	40,000
Western Nevada Copper Co	4,000
Wilson & Cass Gold Mg. Co	539,912
Winona Gold Mining Co	38,000
Yellow Creek Coal Co	33,000
Yuba Gold Mg. & Mill. Co	20,000
Yuscaran Mg. Co., Honduras	§450,000

Reported no Indebtedness.

Blue Ledge Mg. Co.	Grand Canon Gold-Placer Mg. Co.	Mount Pleasant Mg. Co.
Carbonate Hill Mg. Co.	Great Romance G. Mg. Co.	Oxford Gold Mg. Co.
Charleston Oil Co.	Hanover Mg. Co.	Second National Gold Mg. Co., of N. Y. and Colo.
Comet Mg. Co.	Little Chief Mg. Co. Colo.	Small Hopes Cons. Mg. Co., Colo.
Don Enrique Mg. Co.	Manzanita Gold Mg. Co.	Tolima Mg. Co.
Enterprise Mg. Co., Colo.	Marshall Creek Mg. Co.	
Gardner Mg. Co.		

ELECTRIC, GAS, MACHINERY, CHEMICAL, AND POWER COMPANIES.

Companies.	*Indebtedness.*
Bower-Barff Rustless Iron Co	98,000
Brush Electric Co	150,000
Brush-Swan Electric Co	50,000
Central Iron Works	2,956
Crocker-Wheeler Electric Motor Co	700
Cromwell Iron Co	20,000
Colwell Iron Works	91,368
Daft Electric Light Co	460,000
Electric Power Co	175,000
Hazelton Boiler Co	46,000
Jefferson Iron Co	100,000
Johnson Chemical Co	410
Julien Electric Co	41.803
Martin Process & Chemical Co	30,000
National Petroleum Gas Co	5,500
Panama Electric Light Co	84,000
Pasaic Chemical Co	61,000
Peroxida Silicate Co	16,000
Piedmont Electric Illum. Co	15,000
Union Gas & Oil Stove Co	50,000
United Coal and Oil Gas Co	90,000

* Including $265,000 in first mortgage bonds. ** Including bonds and script certificates. ‡ Including some rejected and litigated claims of about $200,000. † Amount of direct debt in United States, $16,537; contingent debt in U. S., $41,375; debt in Mexico estimated not to exceed $32,000. § Including mortgage and debenture bonds.

COINAGE EXECUTED AT THE MINTS OF THE UNITED STATES DURING THE CALENDAR YEAR 1889.

Denomination.	Pieces.	Value.
Double eagles	849,756	$16,995,120
Eagles	429,885	4,298,850
Half-eagles	7,565	37,825
Three dollars	2,429	7,287
Quarter eagles	17,648	44,120
Dollars	30,729	30,729
Total gold	1,338,012	$21,413,931
Standard dollars	34,651,811	$34,651,811
Half dollars	12,711	6,355.50
Quarter-dollars	12,711	3,177.75
Dimes	8,353,389	835,338.90
Total silver	43,030,622	$35,496,683.15
Five cents	15,881,361	$794,068.05
Three cents	21,561	646.83
One cent	48,869,361	488,693.61
Total minor	64,772,283	1,283,408.49
Total coinage	109,140,917	$68,194,022.64

Erection of the Merchants' Bridge.—The Merchants' Bridge of St. Louis is rapidly nearing completion, and the three spans are now in position. Some very quick work has been done in the construction of this bridge. The bridge consists of three spans each 517½ feet in length, resting upon granite piers 85 feet above low water. The work upon the substructure was begun last March. The first span was erected between November 9th and 16th; the construction of the second span was begun on December 4th and finished December 11th, the workmen being employed sixty-five hours; the third span was put in position with about sixty hours' work of the forces employed.

Gold in China.—The *Hu Pao*, native Chinese paper, states: "We have now flourishing copper mines in Yünnan, silver mines at Mao-lang, gold mines at Moh-ho, and coal mines at K'aip'ing. There is also much gold buried in the earth in the southwest parts of Iliasutai, Mongolia, the territory of the Sain Noin Khalkhas. But the government is so afraid of disorder arising from the flocking of adventurers to the mines if they were opened that it keeps a cordon of twenty-two *k'a-luns*, or barracks, to prevent their access to this El Dorado, and a Mongol *djassak*, or head of a tribe or banner, is held personally responsible for their protection. The general at Sanhsing, in Kirin, has reported to the provincial government that a man was recently arrested for unlawfully digging for gold. On examination he stated that in the summer of last year he and four others went to work at the gold diggings in the Eastern Hills. While they were there a patrol came to the place, and the officer in command of it promised not to interfere with the miners if they would pay him 8 ounces of golddust. This amount they duly handed to one of the soldiers. The officer, his lieutenant, and the men implicated strenuously deny this statement; but the memorialists, who appear to believe in the truth of it, request that they may be regularly placed on their trial.

Hong Kong Mint.—Sir William des Vœux gives in his report the following particulars of the profit made by Hong Kong in the last five years on the issue of subsidiary silver coins:

	Coinage.	Profit.
1884	$212,500.00	$26,285.37
1885	282,200.00	33,464.87
1886	476,500.00	1,384.48
1887	497,300.00	24,352.73
1888	910,000.00	72,904.77

The issue of 1889 will, according to present indications, again show a great advance, having already (October 23d), reached a total of $948,500, consisting of 11,854,250 separate coins; and though this must not be counted on as a permanent source of revenue, Sir William sees no reason to anticipate any falling off in the demand in the immediate future. He adds in explanation: The desire of the Chinese for these coins (consisting of pieces representing 20 cents, 10 cents, and 5 cents manufactured at Her Majesty's Mint for this colony) appears to be almost insatiable; and if from any cause there is delay in the supply from England, the purchasing price at once rises to a premium, which has been known at the Chinese New Year to be as high as 20 per cent. I understand that this coinage is growing more and more in favor among the vast population of the neighboring empire, probably owing to confidence in its exactly uniform standard of value, and that the coins are not only used as money, but are, to a considerable extent, converted into buttons and other ornaments.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.]

Conversation on Mines, etc., between a father and son, to which are added questions and answers to assist candidates to obtain certificates for the management of collieries, a lecture on the atmosphere and explosive gases, tables of calculations, rules of measurements. By William Hopton, certificated colliery manager. Reprinted from the eight English editions by J. B. Lippincott Company, Philadelphia, Pa., 1890. Pages 326. Illustrated. Price $1.25.

The Collection of Buildings and Ornamental Stones in the U. S. National Museum, a Hand-Book and Catalogue. By George P. Merrill, curator of the Department of Lithology and Physical Geology, Smithsonian Institution. Published by the Government. Washington, D. C., 1889. Pages 648. Illustrated.

Report on the Internal Commerce of the United States for the Fiscal Year 1889. Part II. of Commerce and Navigation. By Wm. F. Switzler, Chief of the Bureau of Statistics. Treasury Department. Published by the Government, Washington, D. C. 1889. Pages 807.

Pennsylvania Geological Survey. Atlas Northern Anthracite Field, Part V., A A; Eastern Middle Anthracite Fields Part, III., A A; Southern Anthracite Field, Part II. A A. Published by the State, 1889.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

ISSUED JANUARY 21, 1890.

419,618. Electric Railway System. Thomas E. Adams, Cleveland, O.
419,628. Coal Handling Apparatus. Walter S. Bogle, Chicago, Ill.
419,629. Transfer Carriage for Elevated Ways. Walter S. Bogle, Chicago, Ill.
419,630 Coal Handling Apparatus. Walter S. Bogle, Chicago, Ill
419,650. Compound Belting. William C. Edge and Charles Edge, Newark, N. J.
419,655. Manufacturer of Artificial Stone. John F. Gesner, New York, N. Y.
419,684. Fish Plate. Jacob Lamplugh, Philadelphia, Pa.
419,695. Furnace for Coating Metal. Harry B. Lynch, McKeesport, Pa., Assignor to Edmund C. Converse, New York, N. Y.
419,698. Device for Conveying and Elevating Ladles. William A. Mitchell, Nevada, Mo.
419,711. Grading and Leveling Instrument. David D. Rogers, Daytona, Fla.
419,721. Car Coupling. Cephas C. Shelburn, Escarbaba, Tex.
419,738. Hydrocarbon Burner. Samuel Turner, Cincinnati, O.
419,748. Furnace Door Opener. Andrew H. Ballagh, Macon City, Mo.
419,752. Car Coupling. James M. Cosby, Elberton, Ga.
419,757. Well-boring Apparatus. Lawrence V. Elder, New Orleans, La.
419,770. Rotary Engine. John R. Hart, Charles F. Currey, and Charles F. Bridge, North Topeka, Kan.
419,790. Ore Washer. Samuel C. McLanhan and William F. Kirk, Hollidaysburg, Pa.
419,799. Car Axle Box. William M. Shipp, Jr., Midway, Ky.
419,805. Thermo-Dynamic Motor. Carl W. Weiss, Brooklyn, assignor of one-half to Charles Kruse, New York, N. Y.
419,814. Rail Chair. James J. Anderson, Chicago, Ill.
419,822. Liquid Fuel Burner. Almon H. Calkins, Chicago, Ill.
419,841. Electric Railway. Mark W. Dewey, Syracuse, N. Y., Assignor to the Dewey Corporation, same place.
419,850. Car-Wheel Patrick H. Griffin, Buffalo, N. Y.
419,852. Hoisting Block. James T. Hamray, Wilkinsburg, Assignor to the Jackson Manufacturing Company, Harrisburg, Pa.
419,883. Drill. Francis H. Richards, Hartford Conn., Assignor to Eckley Coxe Drifton, Pa.
419,899. Drawbar for Mining Cars. John T. Taylor and James Smith, Belleville, Ill.
419,931. Process of Distilling Mineral Oils and Like Products. James Dewar, Cambridge, County of Cambridge, and Boverton Redwood, Finchley, County of Middlesex, England.
419,939. Dumping Car. John M. Goodwin, Sharpsville, Pa.
419,958. Friction Clutch. Theodore C. Kenny, Scottdale, Pa.
420,001. Flood Gate. Henry H. Baltzley, Assumption, Ill.

PERSONALS.

Mr. Geo. Cox has succeeded Capt. Harry Browne as manager of the Bellefonte Furnace, Ironton, Ohio.

Mr. John Canning has been appointed superintendent of the Homestake Mine at Aspen, Pitkin County, Colorado.

Mr. E. R. Holden, of Denver, the well-known owner and organizer of smelting works in Colorado, is in New York for a few days.

Mr. Will Patton, son of Mr. W. H. Patton, who is superintending the Broken Hills silver mines in Australia, left San Francisco last week to rejoin his father.

Mr. J. B. Wheeler, president of the Aspen Mining and Smelting Company, left New York for Colorado on Thursday. Mr. Wheeler expects to return two weeks hence.

Capt. Harry Browne, of the Bellefonte Iron Company, of Ironton, O., has been appointed manager of the Victoria Furnace of the Virginia Iron Company, at Goshen Bridge, Va. W. J. Mahony will succeed Mr. Beck, the present founder at the furnace.

The following gentlemen have been elected officers of the Engineers' Club of Philadelphia: President, Prof. H. W. Spangler; vice-president, Wilfred Lewis; secretary and treasurer, Howard Murphy; directors, John T. Boyd, George Burnham, Jr., E. V. d'Invilliers, Henry G. Morris, S. M. Prevost.

Mr. Geo. D. Waters, mining engineer, sails on the 30th inst. for Chili, where he purposes working auriferous copper ores by smelting in a water jacket furnace. Mr. Waters has made some successful working scale experiments with this method, and his success was very encouraging. His address will be English Club, Iquiqui, Chili.

The mid-winter reunion of the Association of the Rensselaer Polytechnic Institute will be held at Buffalo, N. Y., on Wednesday, January 29th, 1890. The headquarters will be at the Niagara Hotel, which is described as "an ideal place for the alumni meeting." The meeting promises to be a very pleasant one and will, no doubt, be largely attended.

The American Institute of Electrical Engineers met Tuesday evening at the club house of the American Society of Civil Engineers, New York, to hear Prof. W. A. Anthony, of Manchester, Conn., read a paper reviewing the modern theories of electricity. About 75 members and guests of the organization were present, among whom were M. D. Law, Philadelphia; S. S. Dickensen, Nova Scotia; William Maver, Jr., George A. Hamilton, John Bogart, C. O. Mailloux, Prof. M. M. Garver, Holbrook Cushman and Prof. Otto A. Moses.

It is proposed to hold a Transvaal Mining Exhibition in London, Paris, Berlin, Amsterdam and New York, under the patronage of President Kruger. The promoters, in putting the objects of the venture before the public, state that "the European and South African public during the last three years have sunk an enormous capital in the Transvaal mines, and naturally follow the development and resources of the country with great attention. The majority of speculators and European investors have not the remotest idea of the nature of the different ores and their extent, and therefore an exhibition of quartz, together with photographs, maps, plans, and models of the production in gold bars, will attract the highest attention and induce confidence, especially when at intervals during the day pannings will be made of a piece of quartz of one of the mines by an experienced prospector, and in addition a 5-stamp battery will be in motion to illustrate the details connected with gold extraction. The result of this exhibition will be of great benefit to the Transvaal, and is bound to improve business and induce large firms to open branches there, and will also facilitate the formation of new companies. Nothing will be spared to make the exhibition a complete success. Every mine will have its own stall, with the name and full particulars of the company, together with details of the crushing and development. Mr. Woodford, the State mining engineer, will give certificates to establish the identity of the different samples and other matters connected therewith." The conditions to exhibitors are on a liberal scale. The charge will be for a stall 2 feet square, with Exhibition rights, transport, freight and carriage from Johannesburg to London, Paris, Berlin and Amsterdam, £10 per sample of quartz not exceeding 4 cubic feet, to be delivered at the office of the Transvaal Mining Exhibition, boxed ready for shipment.

INDUSTRIAL NOTES.

The Rising Fawn Furnace, in Dade county, Ga., is being relined and the stack built up from 65 feet to 75 feet in height.

The Jefferson Iron Works, of Steubenville, Ohio, are dismantling their Bessemer steel plant. It has been idle for about three yesrs.

The Latrobe Steel Works, at Latrobe, Pa., will shortly commence the erection of an additional open-hearth furnace and another tire mill.

The Mingo Steel Company, of Wheeling, W.Va., declared a two per cent. dividend on the earnings of last year, and paid in addition a $10,000 mortgage.

The Oregon Iron and Steel Company, which has been repairing its furnace at Oswego, Ore., expects to have the stack in blast again by the 1st of February.

The Glen Iron Works at Allentown, Pa., have been sold by order of court, under a foreclosure of mortgage, to the Allentown Rolling Mills for $45,000.

Carnegie, Phipps & Co., Limited, of Pittsburg, are remodeling the rod-mill department of their Beaver Falls Mills, with a view of increasing its capacity.

General E. Burd Grubb, of Edgewater Park, New Jersey, has purchased the Lynchburg Furnace at Lynchburg, Va. The price paid is said to have been $100,000.

The two furnaces of the Onondago Iron Company, at Geddes, near Syracuse, N. Y., have been leased for five years by Mr. F. B. Baird and others, who intend to start them at once.

The Ohio & Big Sandy Railroad Company have sent out a corps of engineers to locate a route for a connecting line with the Norfolk & Western Railway. They are ballasting the present roadbed with blast-furnace cinder.

The nail factory of the E. & G. Brooke Iron Company, Limited, at Birdsboro, Pa., which has been idle for some time, as already reported in this column, owing to a difference with the nailers in regard to wages, resumed operations last week.

The Crescent Steel Company, of Pittsburg, Pa., recently added to its plant an 18-inch plate mill. The mill will be used for rolling down slabs and finishing them off in thin sheets. Other extensions and improvements are stated to be contemplated by the firm in the near future.

Montgomery furnace, at Port Kennedy, Montgomery County, Pa., is now being built up from 50 to 65 feet in height, and the plant is being improved by the erection of a new vertical blowing engine and three fire-brick stoves. The furnace is expected to be in blast again in April.

The Springfield Iron Company, Springfield, Ill., has added to its plant a new 12-inch guide mill, equipped with a Siemens heating furnace, 20 × 8 feet in the hearth. This makes the fifth train of rolls this company has running double turn on bar iron and splices.

The Deer Lodge charcoal iron furnace at Ishpeming, Mich., went into blast recently, after being closed down for repairs for some time. The Carp furnace at Marquette, Mich., which is being refitted by Hiram A. Burt, will be put in blast soon. The Excelsior furnace at Ishpeming is also undergoing extensive repairs with a view of beginning work soon.

A certificate of incorporation of the East River Tunnel Company, which has been formed to build a tunnel under the East River from South Seventh street, Brooklyn, to Broome street, New York, was filed in the County Clerk's office this week. The capital stock is placed at $100,000. The tunnel is to be three-fifths of a mile long. The directors are Benjamin S. Heening, T. A. Patterson, Robert Whitehall, H. C. Hilmers, Grennell Burt, C. H. Odell, Otto Andreae, Alexander Curtis, and J. C. O'Brien, of New York, and C. W. Smith, of Chicago.

At the annual meeting of the Carbon Iron Company, of Pittsburg, Pa., held at the office in the Mills Building, New York City, on the 23d inst., the following gentlemen were elected as directors: Messrs. H. W. Lash and Matthew Graff, of Pittsburg, Pa.; Messrs. John D. Slayback, C. M. Raymond, E. J. Brinner, John G. McCullough, F. B. Robinson, William Brandreth and Edward F. Slayback, of New York. Officers were chosen as follows: C. M. Raymond, president; Matthew Graff, vice-president; H. W. Lash, general superintendent and manager of the works; John D. Slayback, treasurer; William Brandreth, secretary.

The Norton Iron Works, of Ashland, Ky., and the Kelly Nail Company, of Ironton, O., will bond their present plants for $50,000 each, and will unite in building a steel plant at Ashland, Ky., on the bank of the Ohio River. An equivalent to $100,000 has been obtained in donations, exemption from taxes and promised rebates on freight charges. The city of Ashland will issue $25,000 in bonds to purchase cinder at one dollar per ton from the furnaces connected with the plant. A meeting of the board of directors of the Norton Iron Works has been called for January 22d, at which meeting final action will be taken.

The Cape Ann Drop Forge Works was recently incorporated under Massachusetts laws with the following officers: W. N. Fisher, president; N. H. Phillips, vice-president; Geo. R. Bradford, treasurer, and Geo. D. Loud, secretary and agent, with offices at Mason Building, Kilby street, Boston. Mr. Loud, the general manager of the works, is the owner of the Loud patents on pumps and round edge tackle blocks. The plant of the new enterprise is being erected at Gloucester, Mass., and will consist of a main building, 150 by 40 feet, and an annex 48 by 50 feet. A side track of the Boston & Maine Railroad connects the buildings with the main line. They expect to be ready to fill orders April 1st.

It is reported that the Westinghouse Electric Company, which has its main plant almost in the heart of Pittsburg, Pa., has decided to move out of the city. It will erect, as soon as possible, new works near Brinton, on the main line of the Pennsylvania Railroad, about twelve miles from Pittsburg. This removal is made necessary on account of lack of space and the cost of enlarging a plant in the city. The present buildings are to be sold. The proceeds will be used in the construction of the new shops, which will occupy a plot of fifteen acres. It is the purpose to lay out and build up a new borough surrounding the plant, as is being done at Wilmerding, several miles distant, where the new Westinghouse Air-Brake Works are nearing completion. The electric company since a year ago has increased the number of its workmen from 600 to 1,300, and these, with their families, will give the new town a population of about 5,000. The company in 1889 set up 134 central stations in Europe and America with an aggregate of 234,250 lights. The new town will have connections with the Pennsylvania and Vanderbilt systems of railroads.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are give in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

528. Iron drive pipe 12 inches in diameter for four wells, each well requiring 600 feet of pipe. Texas.

529. Pumps. Four-well pumps, each to have a capacity of 250,000 gallons per 24 hours and capable of lifting the water about 200 feet and forcing it 150 feet into stand pipe. Texas.

530. Machines for grinding and corrugating flour mill rollers. Texas.

531. Two second-hand road scrapers. New York.

532. Lathe, 24-inch swing; bed not less than 12 feet between centers; also drill press. Kentucky.

533. Machinery for making hubs, spokes, rims, etc. Alabama.

534. Machine for flooring and molding; also, stave machine to saw staves and make bucket staves, hub staves, etc. Florida.

535. Engine, 350 horse power, Corliss. Texas.

536. Machinery and supplies used in railroad construction and other engineering works. Virginia.

537. Wood-working machinery; shaper, scroll saw, universal wood-worker and other machinery. Georgia.

538. Engine and boiler. Georgia.

539. Canning factory machinery. Kentucky.

540. Engine, 60 horse power, automatic, in first class condition. New York.

541. Boiler, 75 horse-power. New York.

542. Belting, shafting, pulleys, etc. Georgia.

543. Magnesite and magnesia brick. Names and addresses of dealers and manufacturers in this country and abroad. Pennsylvania.

544. Machinery for cotton gin house. 25 horse power stationery engine and tubular or two-flue boiler to correspond; also steam or hydraulic press and two gin stands, 70 or 75 saws. Louisiana.

545. Machinery for making lime and fertilizers. Crushers, conveyors, elevators, barrel machinery, kilns, etc. Mississippi.

546. Slate machinery for making slate pencils, sawing and planing slate and making roofing slate. Virginia.

547. Ice machine and boilers with a daily capacity of 15 tons; description and bids. Kentucky.

548. Flour mill machinery and boilers for a

mill to have a capacity of 40 bbls. per day. Kentucky.

549. Talc. Addresses of firms who handle this mineral. Georgia.

AMERICAN GOODS WANTED ABROAD.

490. Teal hoists. Australia.
492. American goods on consignment. Australia.
493. India rubber goods, mechanical. Australia.
494. Cutlery. Australia.
495. Watches; cheap grade. Australia.
496. Wire cables. Australia.
497. Blasting powder. Australia.
498. Safety burglar alarms. Australia.
499. Gas works; especially gas water system. Australia.
500. Electrical supplies; full line. Australia.
502. Spades, shovels, &c. Queensland.
506. Tin-working machinery; especially a machine that will do folding, grooving and turning, all in one, for canisters. Queensland.
507. Lighting by electricity for railway cars. Queensland.
508. Lighting by oil for tram cars. Queensland.
509. Blasting and sporting powder. New South Wales.
511. Shooks. Quotations for white pine and spruce shooks, ¾-inch dressed one side, f. o. b., in the following quantities and sizes: 2,000, 10 inches wide and 15 inches long; 2,000, 10 inches wide and 12 inches long; 6,000, 2 inches wide and 12 inches long; 2,000, 10 inches wide and 18 inches long; 2,000, 10 inches wide and 14 inches long; 6,000, 2 inches wide and 14 inches long. West Indies.
512. Portable houses. South Africa.
513. Coal cutter. South Africa.
514. Agency wanted for mining and other machinery. South Africa.
550. Machinery for manufacturing corn meal. South America.
551. Kiln for drying corn; plan and estimate of same. South America.
552. A large quantity of coke monthly for smelting purposes in Venezuela, South America. Those in a position to fill the order can learn particulars by addressing this office.

GENERAL MINING NEWS.

ARIZONA.

COCHISE COUNTY.

TOMBSTONE MINING AND MILLING COMPANY.—This company has received four Burleigh drills that will be placed in the Lucky Cuss mine. They will be run by compressed air. The engine and boiler on the Tribute mine is being moved to the Lucky Cuss, where it will in future be used to run the compressor. The Burleighs, says a local paper, will not be confined to the Lucky Cuss, but adjacent claims that connect this claim underground will also be worked by the power drills. The pipe through which the compressed air works can be extended from the Lucky Cuss shaft, a distance of about 5,000 feet.

MARICOPA COUNTY.

PHŒNIX MINING COMPANY. — Mr. Bradstreet, of the well-known New York firm of bankers and brokers, has recently returned from Arizona, where he made a careful examination of the Phœnix gold mine. His report on the property will undoubtedly prove of great interest; it will be published in these pages next week. This particular Phœnix appears to be rising from its ashes and promises to yet make glad the hearts of its friends.

PINAL COUNTY.

SILVER KING MINING COMPANY.—At the annual meeting of this company, held in San Francisco last week, 93,123 shares were represented of the capital stock, and the following board of directors was elected for the ensuing year; George E. Gray, E. A. Barney, H. H. Noble, C. H. Fish, W. S. Lyle. The financial statement showed an indebtedness of $11,270.20.

YAVAPAI COUNTY.

BLACK HORSE MINING COMPANY.—Mr. David Boaz has closed the purchase of the Black Horse mine, eight miles from Prescott. The mine, says the *Journal Miner*, is situated half-way between the Kansas City Mill and Mining Company property (Groom Creek) and the Senator mines, which were recently purchased by Phelps, Dodge & Co. Mr. Boaz, with Kansas City associates, has organized the Black Horse Mining Company, of which the capital stock is $150,000, chartered under the laws of Arizona. This mine has produced some rich ore. There is a shaft down 60 feet. Mr. Boaz has on the ground a new steam hoist. He will sink in the old shaft where the water had prevented the former owners from going deeper. This is the first mining company organized and put in operation by Mr. Boaz in this county in the last eighteen months. His first was the Boaz Company, then the Dixie, the Quartz Mountain, the Kansas City Mill and Mining Company, and now the Black Horse Mining Company.

CALIFORNIA.

AMADOR COUNTY.

(From an occasional correspondent.)

Amador county is suffering from excessive rains, which have flooded the Amador Canal. Considerable surface work at our mines is delayed by the storms. The roads from Ione City to our mines are impassable. Several of our large mills, particularly that of the Amador Company, that are nearing completion, are at a standstill, waiting for iron. The county, however, looks very prosperous for the coming year. Several of our mines are adding extensive improvements.

HECTOR GOLD MINING COMPANY.—A shaft 300 feet north of the Wildman mine is to be sunk on the company's property, according to current rumor.

SUTTER CREEK MINING COMPANY.—This company contemplates starting a working shaft, which can be driven to the 500-foot level. There will be no water to contend with, and the walls are hard and well defined.

COLORADO.

EAGLE COUNTY.

(From our Special Correspondent.)

This district produced in the year 1889 $650,000. The greatest mining case in the annals of the Battle Mountain District came to trial in the United States Court at Denver last month, before Judge Phillips. The question involved was that of the Apex. The burden of the plaintiffs, the Battle Mountain and Little Chicago lodes, was to substantiate the theory that the territory lying vertically between them and the Champion lode was a mineralized mass to the quartzite vein, for which they sunk through the intervening strata what is designated as the Slockett shaft. That of the defendants, the Champion lode, was to prove conclusively that they possessed a vein in all the sense of the term, the outcrop or apex of which was inclosed within and parallel to their side lines. The attorneys for defendants were the Hon. C. C. Parsons and Hon. B. F. Montgomery of Denver. The Hon. Chas. J. Hughes conducted the plaintiff's case. The trial occupied two weeks, each side examining 20 witnesses. The jury returned a verdict in favor of the Champion, thereby granting them the legal right to pursue the quartzite vein upon its dip, into and beneath the territory of the Battle Mountain and Little Chicago lodes.

GROUND HOG CONSOLIDATED MINING AND MILLING COMPANY.—As an example of rich gold ore extracted from the quartzite, I may cite one or two shipments from the Ground Hog Group, made lately. On one lot the smelter returns give 87 ounces in gold per ton. The other car returned $400 per ton. Nuggets varying from the size of a pea to nine ounces are upon exhibition at the bank in Red Cliff from the above property.

LITTLE CHIEF.—On this group, owned and operated by St. Louis parties, rapid progress in development is being made. The property has the advantage of having the most commodious shaft house and finest plant of machinery on Battle Mountain. A few days ago a solid breast of sulphides was encountered, undoubtedly the continuation of the Iron Mask chute, which (over 200 feet in width) extends in a northwesterly course over a quarter of a mile of claims.

SPIRIT.—This mine is still a heavy producer, shipping from 75 to 100 tons per week of high-grade ore.

WYOMING.—This group, near Red Cliff, and situated on Horn Silver Mountain, has taken its place in the list of regular shippers. It is now in the lime-porphyry contact, and exhibits a good body of very high-grade ore.

GUNNISON COUNTY.

The coke production from Crested Butte for the year 1889, according to the Elk Mountain *Pilot*, was 42,858 tons, an increase of 2,158 tons over last year. The coke output has gradually increased every year since the business commenced about eight years ago. The product is shipped west, principally to the smelters of Utah, while some of it finds its way to Denver and Pueblo for use in the smelters. The anthracite coal production from Crested Butte for the year 1889 was about 59,000 tons, an increase of about 17,000 tons over the year before. This coal is used in Denver and Salt Lake for domestic fuel. Much of it finds its way to the central parts of Kansas and Nebraska. There is only one breaker here in operation, but plenty of lands waiting for capital to develop them. The bituminous coal production in Crested Butte for the year 1889 was about 85,000 tons, not quite as large an output as for the year previous. This is used principally by the Denver & Rio Grande Railroad for its engines.

MAY-MAZEPPA CONSOLIDATED MINING AND MILLING COMPANY.—Concerning this company, whose stock is one of the most prominent on the Colorado Mining Stock Exchange, the *Journal* of that exchange has the following to say: "Including the North Star Mines, recently purchased, this company owns sixty-seven acres, and a mill and a town site, in Tomichi Mining District, Gunnison County, twelve miles northeast of Sargent, on the Denver & Rio Grande Railway. The property is all patented and covers 3,300 linear feet along the mineralized contact of dolomite lime and quartz. The surface equipment of the property was erected at a cost of $50,000. The principal workings are on the May-Mazeppa claims, and consist of main incline, 340 feet deep, which is connected with shaft extended downward and vertically 220 feet from point on the hill above, and 1,200 feet of levels, all in ore. The ore from these workings is free smelting galena and sand carbonates yielding 65 to 70 per cent. lead and 20 to 25 ounces silver per ton. Tonnage extracted and sold up to this date has netted the company $120,000 above transportation and treatment charges. South of main workings developments consist of vertical shafts, etc., which at depth of 150 feet connect with incline driven 300 feet in ore all the way. Shaft No. 2 is 60 feet deep. No. 3, vertical shaft, and No. 4, incline shaft, are each down 30 feet in ore. No 5 is original discovery shaft. No. 6 incline is down 260 feet in gray sand carbonate ore. From this incline about 2,000 tons have been shipped. No. 7, incline, is down 130 feet. No. 8, incline shaft, is down 65 feet. No. 9 is discovery shaft. No. 10, shaft, is down 55 feet in good ore.

The total development on the property at this time aggregates about 4,000 feet. The development is being prosecuted with a large force. The property is capitalized at 500,000 share of $1 each par value, with C. W. Badgely, of Badgely & Watkins, of Denver, president, and C. E. Taylor, treasurer and general manager.

LAKE COUNTY.

BREECE MINING COMPANY.—A circular has been issued to the stockholders of this company giving the names of the officers elected at the annual meeting last October (see ENGINEERING AND MINING JOURNAL October 12th, 1889,) and also the following interesting information: "The treasurer reported that the company was entirely free from debt. That there was on deposit in the Union Trust Company to the credit of the company $19,171.25; and cash in the treasurer's hands of $1,332.79; total cash on hand, $20,504.04.

After the adjournment of the stockholders' meeting, the trustees met and organized, re-electing the old officers. It was voted that a circular be issued in January, 1890, thus giving to the stockholders a report of the present condition of the company, also of the mine—as well as the future policy of the present management. A resolution was passed, that as soon as enough funds were on hand, the present shaft should be cleaned and fully repaired, and that sinking for silver ore be commenced, as from careful examination made by the company's superintendent it was manifest that at a depth of 800 to 1,000 feet the ore bodies would likely be encountered. The present shaft was sunk some years ago to the depth of about 350 feet, and then for want of funds work was stopped. Since then the shaft has filled with water, and the timbers supporting the sides become rotten. Since October work has been resumed—the water has been pumped out and the shaft re-timbered, and everything is in a safe and proper condition for working. The trustees are now arranging to contract with parties to sink the shaft to a depth of 1,000 feet if necessary, expecting that ere reaching that depth to find good veins of silver ore. It is estimated that it will cost all of $12,000 to do this—thus far, and since said October, there has been expended about $3,800 in placing the shaft in its present safe condition, in repairing the machinery on hand and purchasing all the necessary new machinery, to be thus fully equipped for the proposed sinking.

"The superintendent (Mr. J. H. Fletcher) has spent much time examining other properties near our mines that have developed silver ore, and he finds in all cases that the dip of the vein thus found have all been toward the Breece property, which consists of about 42 acres of land (all patented), on which there is a large deposit of red hematite iron ore, and which we have sold in previous years to the Colorado Coal and Iron Company. Owing to the depression in the iron market during the past year we have not sold any ore, but at the present time the iron industry has improved, and we feel that we shall be able to make sales of iron ore soon again; indeed, efforts are now being made to arrange to supply some of the large iron and steel manufacturers at Pueblo, Colo., with ore."

LEE BASIN MINING COMPANY.—The report of the company for the year 1889 is very satisfactory, says the Denver *Mining Industry*. The company is working the Lee Basin, Olive Branch, Clyde, and Alpha claims. The total amount of ore shipped, or rather sold, during 1889 amounted to some 5,000 tons, which had a market value of some $150,000.

LUCY B. HUSSEY.—The strike in this mine having demonstrated the fact that in order to get at, develop and handle the ore from the new chute to advantage, a new shaft must be sunk, a contract has been let for the sinking of such a shaft, pending the reaching of the ore body by which shaft, all work apart from keeping the old workings free of water, has been abandoned, and all the force employed at the new shaft, which has already attained a depth of about 15 feet, and from the surface has been built up, in order to furnish dumping ground. Over this there has been erected a commodious shaft house, and connection made with the hoisting plant of the old shaft, and the new one will be driven down with great rapidity. Should this shaft develop what is expected, it will probably revive the deep shaft scheme to prospect under the city of Leadville.

LEADVILLE CONSOLIDATED MINING COMPANY.—In the mining cases of this company against B. M. Riley, Patrick Kearney and others, and John McCombe, orders were made in the United States Circuit Court at Denver, dismissing the three actions. One suit was for unlawful detainer, the other a bill for an injunction, and the one against McCombe for damages. The mining property over which the litigation in 1886 was begun is known as the Shamrock mining lode, in the California mining district, located in Lake County. The December product was smaller than usual, amounting to 984. Sales of unnecessary machinery which have been closed during the month have raised the company's surplus to $12,000.

SMALL HOPES CONSOLIDATED MINING COMPANY.—The December product was $10,000. The company on January 1st had a cash surplus of $12,000, in addition to the reserve fund of $55,700. The superintendent writes to the New York office that the McCormick shaft is now in ore, although it is of low grade.

LARIMER COUNTY.

GOOD LUCK.—It is reported that John Zimmerman of the Zimmerman mining district has sold this mine to a St. Louis syndicate of capitalists, who will employ a large number of men in the spring to open up the mine. The price reported was $5,000.

PITKIN COUNTY.

A case of mining trespass is just now attracting the attention of the Aspen mining men. Some time ago the J. C. Johnson mine got permission to run its second level through to a connection with the Park Regent. The connection was made recently, and the Park Regent folks find, it is said, that the Johnson has taken out a large quantity of ore inside of the line which has been supposed to be the dividing line between the properties. The Park Regent had worked up to this line at two or three points. It is not thought possible that it can be more than a foot wrong, but a joint survey is now being made to determine it exactly. The ore has been extracted from 20 to 40 feet inside of the line. The amount taken is variously estimated at from 1,000 to 2,500 tons, of the value of about $50 per ton. The Johnson has offered to settle, but the basis of settlement proposed has not been satisfactory. The amount of the trespass will be ascertained as accurately as possible, and it is thought probable that an amicable settlement will be effected.

A motion for a new trial in the $2,000,000 case of A. W. Rucker against Harvey Young, J. B. Wheeler and others will be argued before Judge Allen March 3d. When the case was tried a few months ago Judge Stuart rendered a decision deciding in the plaintiff's favor.

ASPEN MINING AND SMELTING COMPANY.—From the annual report of General Manager F. G. Bulkeley for the fiscal year ending December 1st, read at the stockholders' meeting in New York City recently, we condense the following:

"The company had a cash balance of $72,100.90 on December 1st, 1888, from which was to be deducted November, 1888, expenses paid in December, leaving an actual surplus of $53,513.39. On December 1st, 1889, the actul surplus, deducting November expenses, was $79,955.90. The gross value of ore product was $832,400.54. The number of net tons sold was 17,805, containing 879,095 ounces silver and 3,537,657 pounds lead. The average assay value of the ore per ton was 49.37 ounces silver and 9.93 per cent. lead. During 1888 an average of about 141 men were employed in the mine, and during 1889 the average mining force employed was 165 men. During the year, 7,333 feet of development work was performed. All the ores produced by the company were classified, for convenience, in two groups—lead and dry ores. The lead-ore group includes all ores containing 10 per cent. or more of lead, and the dry-ore group all other ores. Of all the ores shipped, 39.3 per cent. consisted of lead ores, and 60.7 per cent. of dry ores. During the latter part of the year a plan has been inaugurated to mix all dry ores with a sufficient quantity of lead to make five per cent. of lead in the ores after mixing. This results in obtaining better rates for treatment charges and involves a saving of from $1.50 to $3.50 per ton. During the coming year it is proposed to ship no dry ores without adding sufficient lead to make five per cent. On the dumps and in sight of the mine there are at least 25,000 tons of low grade ore. The total quantity of the ore mined and shipped during the year amounts to 18,935 tons as compared with 15,531 tons in 1888. A comparison of the work this year with that performed in 1888, exhibiting the cost per ton, shows considerable improvement. It will be borne in mind that our mining work this year has been to a considerable extent below the Veteran tunnel level. A saving of $2.48 per ton on a total on the year's product of $46,557 has been effected, notwithstanding greater amount of development work performed and increase of mining in deep levels.

The company will have its own electric plant in 1890. The Thomson-Houston Company will probably furnish it, and the Diamond Prospecting Company of Chicago will probably furnish us diamond drills for prospecting.

With regard to the future of the company I do not hesitate to say that the prospects for profit during the coming year are excellent, with considerable resources already developed in the Washington No. 2, Aspen, Mammoth, Emma, Robert Emmett, General Shields and other claims, and with every prospect of discovering a new body of ore in the lower levels of the last-named claims, I think that the means for resumption of dividends may be looked for as speedily forthcoming."

Since December 1st, President J. B. Wheeler informs us, that the company's surplus has been increased to $125,000.

DURANT VS. BONNYBEL.—This interminable suit is again before the public. On the 16th inst., in Denver, the Bonnybel people retaliated with a batch of 19 affidavits, as answers to the numerous affidavits filed by the Durant people three weeks ago in the Durant-Bonnybel case, in which David M. Hyman, of Cincinnati, is plaintiff, and John C. Eames, Elmer G. Butler and others are defendants. The Bonnybel people have won the case at each of the two trials had in the United States Circuit Court But the Durant people want a new trial, and in order to try to get it the plaintiff filed a number of affidavits alleging undue influence with certain jurors, and especially with jurors Atkinson and Beebe. The motion for a new trial will be argued shortly before Judge Hallett.

(From our Special Correspondent.)

ASPEN, Jan. 15.

Ore shipments from the mines of this district for the week ending January 10th were as follows: To Denver, 668 tons; to Leadville, 587 tons; to Pueblo, 751 tons; total, 2,006 tons.

ASPEN is steadily producing fair grade ore. Two hundred and fifteen miners are employed. An electric system for hoisting and incandescent lighting has been added.

ASPEN DEEP MINING AND DRAINAGE COMPANY.—Work is progressing in the Homestake shaft of the company. Steam has been raised in a 300 H. P. Abendroth & Root sectional boiler to run two Corliss 20×48 inches double cylinder engines, one No. 9 sinking pump and 14.6×12 inch duplex Knowles station pump, with 10 inch water column, 5 inch steam and 4 inch air line. The 16×16 Norwalk air compressor will furnish power for four new style Ingersol drills, size "C."

ASPEN UNITED.—This prospect was bought for $8,000, and $6,000 went for development. Capital stock is $400,000, divided into 400,000 shares. The location of the mine is Maroon Creek. For the past ten days about five tons per day of 50-ounce ore have been shipped. When the upper workings are connected with the old Dominion tunnel the output will be increased to ten tons daily.

COMPROMISE.—This mine is now employing 100 men. Its daily product, when the tramway is in good working order, is 125 tons of 30-ounce ore. The mine has shipped very little for the past 60 days, but will resume shipments in a short time.

SMUGGLER TUNNEL.—The plant of machinery consists of one forty horse power boiler, 16x16 Norwalk air compressor, two old pattern Ingersoll drills, size 2¾ inches. The tunnel has been driven 625 feet, showing gray lime in the breast of tunnel. It has been estimated that 10 feet per day can be driven with this equipment.

GEORGIA.

DAHLONEGA COMPANY, LIMITED.—Concerning this company, to which reference was made in the ENGINEERING AND MINING JOURNAL of November 23d, the *Financial Times* of London says: "The first direct arrival of gold from the Lockhart Mine of the Dahlonega Company, Limited (Georgia), weighing 34 ounces, has been delivered at Messrs. Pixley & Abell's. A discovery of an entirely new and unexpected lode has just been made, and 56 feet in length 2 feet wide laid bare, with no indications of giving out. The superintendent, Mr. E. Crisson, reports that there is enough ore in sight to run the 20-stamp mill for six months, and the first report of this crushing may be looked for about the end of this month.

MAINE.

CUMBERLAND COUNTY.

PORTLAND SMELTING WORKS.—A press dispatch says that these works at Portland have been bounded by an "English syndicate" and Lorenzo Taylor, one of the principle owners, has gone to England to comple the sale of the property, which is to enlarged by the syndicate.

MICHIGAN.

COPPER MINES.

ARNOLD MINING COMPANY.—This company announces that all the stock on which the assessments due last October shall not have been paid will be sold by public auction February 8th. The assessment is 10 cents per share on the 40,000 shares, and is levied for the purpose of paying the company's debts. The Arnold mine is in Keweenaw County, Mich., about 20 miles from the Calumet & Hecla. No work has been done, says a Boston paper, for more than 20 years. There are copper veins running through the property, which consists of about 1,000 acres of mineral land. The stock, whose par value is $25, is mostly held by three or four people, and has sold as high as $1 and as low as 5 cents. Current quotation is 10 cents, at which sales were made this month.

CENTENNIAL MINING COMPANY.—Treasurer Demmon in Boston received this week some samples of rock taken from the latest find at the Centennial mine. The lode from which this rock is taken is the second strike, and is about five-eighths of a mile from the main shaft. The lode in the north shaft is showing richer rock than ever before. The samples received Monday give rock taken from the surface. An estimate places the assay at 20 per cent. copper. A shaft is being sunk in this ore-body which is about six feet wide. Sixteen hundred feet of pipe will be ordered at once, writes Agent Vivian, to carry compressed air to the shaft, and a drill will be put in as soon as possible.

IRON MINES.

PAINT RIVER IRON COMPANY.—At a meeting of the stockholders held in Chicago recently the following officers were elected: President, J. K. Stack, Escanaba; vice-president, Madison La-Monte, Chicago; secretary-treasurer, W. H. Davis, Jr., Ashland; general manager, Morris R. Hunt, Ashland; superintendent, Frank Scadden, Crystal Falls. The officers-elect comprise the board of directors.

REPUBLIC IRON MINING COMPANY.—The annual meeting was held on the 13th inst. in Cleveland, Ohio. In the last four months it is stated four dividends have been paid, each of $1 per share. Two of the four were declared last October, one in December, and one only a week or so ago. The old board of directors was re-elected, and is made up as follows: Charles Hickox, S. P. Ely, J. V. Painter, Charles G. Hickox, Joseph Perkins and W. D. Rees, of Cleveland; Peter White, of Marquette, Mich.; G. W. R. Matteson, of Providence, R. I., and H. B. Perkins, of Warren. The directors reorganized by re-electing officers as follows: President, Charles Hickox; vice-president, S. P. Ely; secretary and treasurer, W. D. Rees; auditor, Douglas Perkins. The directors tendered Mr. W. D. Rees a vacation of three months, and delegated Mr. W. D. Castle to look after the affairs of the company during Mr. Rees' absence. Mr. Rees will sail for Paris shortly.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, Jan. 18.

This has closed a week of inactivity in the mines. The many companies and miners were ready and anxious to resume active operations, but the heavy rainfall of the 11th inst. flooded many of the mines, making it impossible to work. Some shafts were filled almost to the top. The ore buyers began the week by offering $26 and $27 per ton for zinc ore. Holders refused to sell for less than $28, so the last named price was paid for clean lots of ore. The indications are that the ore market will open up Monday at $28@$30 per ton for zinc and $21.50 per thousand for lead.

The following is the output of the mines for the week ending January 18th: Joplin mines, 523,290 lbs. zinc ore, and 31,580 lead; value, $7,612. Webb City mines, 524,620 lbs. zinc ore, and 69,790 lead; value, $8,530. Carterville mines, 288,430 lbs. zinc ore, and 43,440 lead; value, $4,817. Zincite mines, 395,690 lbs. zinc ore; value, $5,174. Carthage mines, 42,650 lbs. lead ore; value, $916.17. Galena, Kans., mines, 306,150 lbs. zinc ore, and 60,050 lead; value, $4,233.34. All districts, total value, sold $31,283.31.

A. F. Frye is developing a 40-acre tract of land near the Empire Company's mines. The shaft is about 85 feet in depth, from which a drift is being driven in a good grade of zinc ore. Enough of ore has been taken out to pay all expenses of development.

JASPER LAND AND ZINC COMPANY.—This company, General Noble's enterprise, is now down with the pump shaft to a depth of 170 feet on Sucker flat at Webb City. At this depth the first hard ground has been encountered, which is developing a body of disseminated zinc ore.

MODOC MINING COMPANY.—Dillon & Co. have developed a fine body of zinc ore on this company's land south of Joplin.

MURPHY.—This shaft at Zincite is opening up a very large body of zinc ore. The shaft is now 95 feet deep, and a drift 12 feet high is being driven southwest in the ore body at a distance of 30 feet from the shaft. Thirty-six buckets of dirt were hoisted out that cleaned up three tons of zinc ore.

RUBY.—These mines, south of Joplin, produced 70 tons of clean zinc ore last week that sold at $28 per ton.

MONTANA.

DEER LODGE COUNTY.

HOPE MINING COMPANY.—At a meeting held in St. Louis recently the stockholders elected the following directors: James O. Broadhead, Wilbur F. Boyle, John C. H. D. Block, Luther H. Conn, G. W. Chadbourne, Chas. A. Cuno, Louis Deustrow, John T. Field, Henry J. McKellops, John C. Porter, Aug. F. Shapleigh, H. B. Louderman and H. F. Niedringhaus.

LEWIS AND CLARKE COUNTY.

MONTANA COMPANY, LIMITED.—This company reports its operations as follows for month of December: Total weight of ore crushed, 6,637 tons; yield from the three mills, $101,000; working expenses for the month, $56,500. The estimated num-

ber of ounces contained in returns by assay were: Gold, 3,130 ounces; silver, 28,139 ounces.

MEAGHER COUNTY.

MEAGHER MINING COMPANY.—The capital stock of this company, recently incorporated, is $25,000, shares of one dollar each. The incorporators are: J. C. E. Barker, of Neihart; Lige Edwards, of Anaconda; T. C. Power, of Helena; John Power, of Fort Benton; J. E. Kanouse, of Townsend, and several business men of White Sulphur Springs. The mine which it is proposed to work is known as the Bullion, and is located on Carpenter Creek, near Neihart. This lead is located upon a high plateau running from Carpenter Creek towards the north, and has been traced some three or 4,000 feet. Throughout the Bullion claim, says the Helena *Mining Review*, it crops out boldly, and is exposed in a half dozen places by shafts from 8 to 10 feet deep. The ore body is uniform at every point, and measures about two feet in width, and over two dozen assays made from samples of this vein give upwards of 30 to 40 per cent. lead and 40 ounces in silver. The new company will start a tunnel from Carpenter Creek, and will tap the lead at a good depth, running the tunnel in 85 feet, and should it still prospect encouragingly, a large force will be set to work to sinking, running levels, and stoping ore. The railroad will by that date be completed to Martin's ranch, and will enable the company to commence shipping ore.

YELLOWSTONE MINING COMPANY.—Within the past few weeks a large portion of the working stock of this company has been disposed of, says the Helena *Mining Review*, and the company expects to start operations in the spring with a working capital of about $150,000, after the mine and smelter have been freed from incumbrance.

SILVER BOW COUNTY.

BUTTE AND BOSTON MINING COMPANY.—Superintendent Palmer of this company gives an interesting summary of the condition and prospects of the property, in a letter written under date of Jan. 10. He says: "We have struck the vein on the 400-foot level of the Silver Bow shaft. The vein is very strong and well defined, carrying both first and second class ore (first class means ore assaying 30 per cent. copper and upward; second class, under 30 per cent). We shall start our drifts immediately. The drift east on the 300-foot is improving daily. The ore-body now is about 10 feet wide of good second and first class ore. No. 2 shaft is making rapid progress. The mines on the hill are looking very well. About the middle of February we shall cut the Bell vein (the richest copper-silver vein of the Chambers Syndicate, Anaconda mine) on the 500-foot level of the East Gray Rock shaft. We expect to have a new and good mine when we reach that vein. The Belle of Butte stoppes look well also. I believe that when we open the 400-foot level in this mine we will have plenty of ore to run our mill for years. In fact, it looks as though we would have more milling ore by May than we can treat in the present mill in several years. The smelter is doing fairly well and will do better through the latter part of this month. Our earnings last month (December) were about $61,000 to $62,000, and, no doubt, when we have the present plant in full and regular operation, we shall earn about $70,000 per month, possibly more." The directors of this company, it is reported from Boston, have voted to increase the capacity of the smelting works by building six new furnaces—one blast and five reverberatory. These will be built at Butte as soon as possible, it being hoped to have them in running order in from four to six months. The company will have four furnaces at work February 1st—two blast and two reverberatory—making a total next summer of three blast and seven reverberatory, or 10 in all. These are expected to handle in the neighborhood of 500 tons of rock per day, or five times the present capacity.

PARROT SILVER AND COPPER COMPANY.—Owing to a clerical error in our table of dividends paid by American mines in 1889, published in our issue of January 4th, this company was not credited with the proper amount of dividends it paid. Two dividends each of $9,000, and paid respectively on November 1st and December 1st, 1889, were omitted. The correct figures are: Paid in 1889, $162,000, and total paid to date, $998,000. We thank secretary J. E. Gaylord for calling our attention to the error, and request that all secretaries of mining companies notify us whenever their companies declare dividends.

NEVADA.

ELKO COUNTY.

(From our Special Correspondent.)

That there are bodies of ore in some of the leading mines of the Tuscarora district need not be doubted, but whether under their present managements these mines will make any returns to their stockholders is altogether another question.

COMMONWEALTH MINING COMPANY.—The Union 20-stamp mill commenced running on this company's ore on January 1st.

NAVAJO MINING COMPANY.—This company has the same ore on hand that it had when the mill closed down last March, and as the management are rumored to have the stock well in hand, an advance over its present prices is not unlikely. However, investors should be cautious.

NORTH BELLE ISLE MINING COMPANY.—A body of rich ore has been struck on the 500-feet level, of which the management has made no mention, I believe in any of its reports.

EUREKA COUNTY.

RUBY & DUNDERBERG CONSOLIDATED MINING COMPANY, LIMITED.—An extraordinary general meeting of this company was held in London, England, December 30th, when a plan of reconstruction was agreed on. The new company is to be registered under the name of "The Ruby Company (Limited)." James Wilson, formerly local secretary of the Ruby-Dunderberg, has been appointed manager of that property.

STOREY COUNTY—COMSTOCK LODE.

COMSTOCK TUNNEL COMPANY.—Certain vacancies in the Board of Trustees of the Comstock Tunnel Company having been filled a few days ago, it is now constituted as follows: Herman Stursberg, Theodore Sutro, Otto Loewengard, E Dyer 3d, and Eugene Seligman, all of New York; Herman Zadig, of San Francisco, and Edward W. Kinsley, of Boston. Of the new trustees, Mr. Zadig is the head of the well-known firm of Zadig, Wollberg & Co., the principal mining brokers of San Francisco. Mr. Kinsley is Chairman of the Board of Railroad Commissioners of Massachusetts, and Mr. Dyer is connected with Ladenburg, Thalman & Co. The officers of the company are Theodore Sutro, president, Eugene Seligman, vice-president, H. H. Thayer, secretary and treasurer, and C. C. Thomas, general superintendent.

Considerable significance is attached to the election to the board of Mr. Hermann Jadig, who is largely interested in a number of the Comstock mines, and may be influential in securing a more prompt payment of ore royalties due the company.

KENTUCK MINING COMPANY.—Judge Wallace, of San Francisco, has decided that Governor Stevenson must account for the bullion realized from ore extracted from this company's property under the contract which provided that Stevenson should pay a certain royalty per ton. According to its terms, says the Virginia City *Chronicle*, Stevenson agreed to make a monthly statement, and to return 65 per cent. of the assay value of the ore "at the mine." In place of doing so he returned 65 per cent. of assay value of ores "at the mill," the difference between the two assays varying from 30 to 35 per cent. Two weeks after this resolution was passed another contract was drawn up and signed by the president and secretary of the company and Stevenson, the contractor, in which the words "at the mine" were omitted by accident or design, under which the privilege was granted of working all ores from the mine of a period of six years or more, the returns being made on assay value of ore at the mill. Senator Jones testified that he had been milling ores for years and always kept the mine assays to protect himself; Stevenson at the same time making the peculiar admission that he had destroyed his. The opportunity for private gain at the expense of stockholders lurks in the difference between mill and mine assays, which will now be thoroughly investigated by J. M. Nougues, who has been appointed referee. It will be remembered that at the annual meeting in 1882 George T. Marye, Jr., a director of the company, accompanied by his attorney, Judge Mesick, made an offer in writing to give a bonus of $25,000 for a similar contract for five years, or $10,000 for one year, or would bind himself to pay double the royalty paid by Stevenson to the company. This offer was refused, the board at the same time declining to appoint a superintendent to look after the interests of the stockholders. This left Stevenson to act in the dual capacity of contractor for himself and agent for the stockholders.

UTAH CONSOLIDATED MINING COMPANY.—The contest for control of this company's stock, to which reference was made recently, ended when it was found that the present management had secured 80,000 shares of the stock by purchase and proxies. The annual meeting is called for January 29th, and the present directors and officers will in all probability be re-elected.

PENNSYLVANIA.

COAL.

Mr. Edward M. Parrott, of New York, recently asked for an order in the United States Circuit Court at Pittsburg, restraining the sheriff from selling certain property of the Cameron Iron and Coal Company, levied upon at the instance of the Rochester & Pittsburg Iron and Coal Company, on the ground that it is covered by a mortgage held by the Central Trust Company, of New York. Judge Acheson decided to allow the sheriff to sell some of the property, the remaining portion to be held until it is determined whether or not it is covered by the mortgage.

JAMISON COAL AND COKE COMPANY.—Mr. William P. De Armitt, of Pittsburg, acting for this company, has made another big purchase of land in Mt. Pleasant township, Westmoreland county. According to local papers, he bought 177 acres from various parties, for which he paid the sum of $36,000.

LEHIGH VALLEY COAL COMPANY.—The report of the operations of this company for the year ended November 30th, 1889, read at the annual stockholders' meeting of the Lehigh Valley Railroad Company in Philadelphia this week, as compared with the preceding year, is as follows: Amount of coal shipped from collieries owned and operated by the company—For 1890, 1,549,784 tons; for 1888, 1,649,316 tons. Amount of coal shipped by tenants of the company and from lands controlled by it—For 1889, 2,220,721 tons; for 1888, 2,057,369 tons; total for 1889, 3,830,585 tons; for 1888, 3,706,685 tons. The decrease in the tonnage from collieries operated by the company, the report explains, is due to the dull condition of the coal trade prevailing throughout the year.

LEHIGH VALLEY RAILROAD COMPANY.—At the annual meeting of the stockholders in Philadelphia, on Tuesday, the 21st inst., the present Board of Directors was re-elected. The annual report showed that the operations of the whole system for the last year have resulted as follows: Transportation earnings, from coal, $8,647,464.73; miscellaneous freight, $4,309,819.31; passengers, $1,839,729.91; express and mail, $145,367.15; other items, $160,762.68; income from investments and other sources, $1,545,912.62; total, $16,649,056.40. Cost of operation, including rentals of leased lines, $11,393,475.53; net revenue, $5,255,580.87. Against which has been charged: General expenses, interest on floating debt, taxes, loss on Morris Canal, etc., $945,768.22; interest on bonds (including interest on guaranteed bonds and stocks), $2,168,571.40; dividends on preferred and common stocks, $2,018,201.87; total, $5,132,541.49, leaving $123,539.38 to be added to the credit of the profit and loss account. Neither the receipts nor the expenses of the Lehigh Valley Coal Company are included in the foregoing statement.

PHILADELPHIA AND READING RAILROAD COMPANY.—The Locust Spring, Reliance, Burnside, Potts and Funnel Collieries, at Shamokin, operated by this company, shut down on the 18th inst. The Good Spring Colliery, at Tremont, was opened by the company on the same day: It is one of the largest in the anthracite region.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to January 14th, were as follows:

	1890. Gals.	1889. Gals.
From Boston	165,286	113,256
Philadelphia	5,703,128	5,570,782
Baltimore		2.013
Perth Amboy	393,743	459,960
New York	20,375,885	15,477,989
Total exports	26,638,242	21,624,000

SOUTH DAKOTA.

PENNINGTON COUNTY.

HARNEY PEAK TIN MINING COMPANY.—A certified copy from the State of New York of the articles of incorporation of the Harney Peak Tin Mining Company was filed with the secretary of state of South Dakota. The object of the incorporation is the "mining, treating and preparing for market, etc., tin and other ores." The capital stock is placed at $5,000,000, divided into shares of $100 each. The names of the trustees for the first year are William M. Deen, Oliver F. Berry, William J. Russell, Charles D. Deshler, Herman Krubel, James Wilson and Charles M. Field. The company is formed for the purpose of carrying on some part of its business outside of the State of New York, namely, at or near Pine City, Pennington County, South Dakota; also at Baltimore, Boston, Newark, N. J., Cincinnati, Chicago, St. Louis, San Francisco and Portland, Ore., and that the principal place of business shall be in the city and county of New York. James W. Fowler, of Rapid City, is resident agent and attorney for the company in South Dakota.

UTAH.

WASHINGTON COUNTY.

STORMONT MINING COMPANY.—In answer to inquiries concerning the condition and prospects of this company, we have received the following from Mr. Chas. F. Hinchman, of 208 South Fourth street, Philadelphia, the president of this company: "The company's mines have been shut down for some time past, and the mill and mines leased to responsible parties at Silver Reef, Utah; they paying a royalty on ore mined and worked, which will cover any expenses of the company likely to be incurred for the present, paying the taxes and keeping the property free from debt. The stoppage of pumping in the adjoining mine by the Christy Mining Company has increased the water in the Stormont mine, and the lower levels from 8th to 4th are now about covered with water, the pumping out of which the company and lessees found too heavy a burden to be successfully borne, and the upper levels having been pretty well worked out, it is a little uncertain as to how long we can continue operations at the high cost entailed for want of railroad communication. We had hoped to see a railroad connecting the Union Pacific with the Atlantic & Pacific built ere this, which would benefit the company's property as well as the entire district, but we are sorry to say there seems to be no present prospect of it."

WEST VIRGINIA.

HARRISON COUNTY.

COLUMBIA COKE AND COAL COMPANY.—This company has been organized for the purpose of mining coal and making coke near Clarksburg. Henry F. Blount and M. M. Parker, of Washington City, and J. T. Farland, of Clarksburg, compose the company, which, it is stated, owns 408 acres of a 9-foot seam located on the line of the Baltimore & Ohio Railroad.

WYOMING.

ALBANY COUNTY.

[From an Occasional Correspondent.]

LARAMIE CITY, Jan. 16.

Increased activity in the mines of this county is promised for next summer. Among the mines under development this winter are the Iron Mine, Bonanza King, and others owned by Messrs. Tower, Allen & Co., and the Little Nell, belonging to Messrs. Dalet, Hall & Co. These mines are all located in Albany County, forty-two miles west of Laramie City, in the Douglas Creek Mining District. The amount of placer gold worked out last year cannot very well be ascertained, on account of having been worked by several Colorado owners, who took their clean ups to Fort Collins and Denver. Most of the mines contain from 3 to 20 per cent. of copper, but not more than one to five ounces in silver, to the ton.

BLUE JAY.—This mine, which is an extension of the Keystone, belongs to the Hon. S. W. Downey, of Laramie, the former owner of the Keystone. The Blue Jay has been opened by tunnels and shafts. It is still on development work, and will have a mill next summer.

FLORENCE.—This mine likewise belongs to the Hon. S. W. Downey, is also under development. The ore was run through the low mortar mill at the Keystone mine last winter. It yielded from $7.80 to $32 per ton, in free gold, averaging about $17 per ton, the tailings after leaving mill running from $60 to $80 per ton. The run through this mill in two months amounted to about $3,350. This mine will be worked in connection with the Blue Jay next summer.

KEYSTONE.—This mine has been sold to an English syndicate, Lionel Sartoris, of this city, at the head. Chief office will be located in Laramie City. This company has now in construction a twenty-stamp mill of Fraser & Chalmer's pattern, with Frue concentrators, self-feeders, the whole to be driven by a turbin watere wheel. This mill will be in operation in February next. The Keystone mine was worked off and on from 1878 to 1889, with a low mortar mill of the old pattern; ten stamps, drop 16 inches, velocity 52 drops per minute, screens 30 and 40 mesh, inside and outside the battery-amalgamation plates, weight of stamps 550 pounds, hand feeding, using steam power. No concentrator nor amalgamator. The mine produced about $200,000 in gold during that time. The ore is partly free milling, and partly a sulphuret of iron, containing gold, about half and half. From $7.50 to $36 per ton has been saved through that mill. Tailings were all saved, by a prepared dump, for future working. The average of all running through that mill has been about $17.35 per ton. The deepest shaft during this working was about 164 feet and the longest drift about 144 feet. The vein averages about three feet six inches in width, and lies in a fine grained, bluish, micaceous slate, with talc walls on either side.

VESUVIUS.—This mine, owned by W. C. Wilson & Co., of Laramie, is also doing development work, preparatory to putting on a mill next summer. The ore is a red oxide of iron, containing free gold. Some of this ore has been shipped, and it is stated to have yielded $19.60 per ton without concentration.

FINANCIAL STATEMENTS.

The following table should have appeared with the financial statements of various mining companies having offices in San Francisco, which was published in this column last week:

	INDEBTEDNESS.			INDEBTEDNESS.	
	Dec. 1st.	Jan. 1st.		Dec. 1st.	Jan. 1st.
Best & Belcher	*	$1,090	Holmes	.....	$7,835
Belle I	$4,896	5,268	Mexican	*	1,341
Belcher	690	8,850	Kentuck	$429	493
Crown Point	727	*	Navajo	11,398	*
Challar	2,539	*	Nevada Queen	.....	3,235
Con. Imp.	9,448	*	North C'nw'h	13,497	16,683
Crocker	7,495	*	N. Belle Isle	14,030	a32,876
Con. N. Y.	*	1,891	Occidental	*	b30,441
Del Mo	18,402	6,646	Savage	32,288	*
Grand P	53,500	49,766	Seg. Bel. & M. C.	4,097	15,446
Gould & Curry	.....	*	Standard Cons.	4,672	13,820
Hale & Norcross	.....	*			

* Cash on hand.

a With large amount of concentrates on hand.

b Less $14,272, the proceeds of the sale of ore concentrates.

MEETINGS.

Atwood Mining Company, at No. 170 Broadway, New York, February 5th, at 2 P. M.

Crosby Electric Company, in Judge Building, corner of Fifth avenue and Sixteenth street, New York City, February 6th, at 12 o'clock noon.

George's Creek Coal and Iron Company, at 29 and 31 Chamber of Commerce, Baltimore, Md., January 30th, at 1 P. M.

International Phosphate Company, at 2 and 4 Stone street, New York, January 27.

Maryland Coal Company, at No. 35 Broadway, New York, February 4th, at 11 A. M.

Santa Lucia Mining & Milling Company, at the Equitable Building, New York, February 5th, at 1 P. M.

Victory Mining Company, at the office of W L. McLaughlin, Deadwood, South Dakoa, February 5th, at 2 P. M.

Wheat Mining Company, at the office of Tuttle, Oglebay & Co., Wade Building, Cleveland, O., February 4th, at 10 A. M.

DIVIDENDS.

Atlantic Mining Company, dividend of $1.50 per share, aggregating $60,000, payable February 1st.

Calliope Mining Company has paid a dividend of one per cent., aggregating $10,000.

Central Mining Company, dividend of $1 per share, aggregating $20,000, payable February 1st.

Colorado Coal and Iron Company, Coupon No. 2, on the bonds of this company will be paid February 1st, at the Mills Building, New York.

Consolidation Coal Company, dividend of $2 per share, payable January 31st, at No. 71 Broadway, New York City. Transfer books closed until February 1st.

Edison Electric Illuminating Company, quarterly dividend of one per cent., payable February 1st.

Mahoning Coal Railroad Company, dividend of two and one-half per cent. on common stock, payable February 1st, at the office of D. W. Pardee, Room 47, Grand Central Depot, New York. Transfer books close January 25th, and reopen February 3d.

Ontario Silver Mining Company, dividend No. 164, of fifty cents per share, aggregating $75,000, payable January 31st, at the office of Lounsbery & Co., Mills Building, New York.

Puzzler Mining Company has paid a dividend of one-half of one per cent., aggregating $2,500, and will also pay a dividend of one per cent. in February.

Thomas Iron Company, of Pennsylvania, semi-annual dividend of five per cent., and extra dividend of 2½ per cent.

ASSESSMENT.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Alliance, Utah	..	Dec. 18	Jan. 20	Feb. 10	.10
Allouez	..	.....	.....	Feb. 20	.50
Belle Isle, Nev.	13	Dec. 4	Jan. 8	Jan. 30	.15
Bellevue - Idaho, Idaho	..	Dec. 20	Jan. 27	Feb. 15	.25
Best & Belcher, Nev	..	Jan. 6	Feb. 13	Mar. 6	.25
Bodie	11	Nov. 11	Dec. 7	Jan. 22	.25
Bullion, Nev.	35	Dec. 4	Jan. 7	Jan. 24	.25
Car. Leonard, Idaho	..	Dec. 14	Jan. 23	Feb 14	.07½
Cons. New York, Nev	2	Dec. 11	Jan. 15	Feb. 5	.15
Exchequer, Nev.	28	Dec. 16	Jan. 21	Feb. 11	.25
General Crook, Dak	6	Dec. 9	Feb. 1	Feb. 20	.00¼
Golden Reward, Dak	5	Jan. 10	Feb. 12	Mch. 1	.02
Kentuck. Nev.	20	Dec. 11	Jan. 14	Jan. 27	.07
May Flower, Cal.	45	Dec. 27	Feb. 3	Feb. 25	.50
Mexican, Nev	39	Dec. 21	Jan. 27	Feb. 4	.30
Monarch, Dak.	9	Dec. 17	Jan. 17	Feb. 3	.01
Mongold, Cal.	29	Nov. 18	Dec. 23	Jan 24	.25
Mono	29	Nov. 18	Dec. 23	Jan. 24	.25
Morning Star, Nev.	6	Jan. 4	Feb. 10	Feb. 28	.01½
N. Occidental, Nev.	1	Dec. 2	Jan. 6	Jan 27	.25
Overman, Nev.	61	Dec. 31	Feb. 5	Feb. 26	.25
Rochester, Utah	..	Dec. 24	Jan. 25	Feb. 10	.01½
Seg. Belcher & Mides, Nev.	5	Jan. 4	Feb. 6	Feb. 26	.25
Spanish R., S. Dak.	4	Jan. 9	Feb. 10	Feb. 27	.02
Trinity River, Cal.	2	Nov. 27	Jan. 6	Jan. 28	.50

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 125 and 126.]

New York.

FRIDAY EVENING, Jan. 24th.

The advance in the price of silver, with the probability of a still further rise in the metal, as well as renewed activity in a number of so-called specialties, has diffused a better feeling in the mining market this week, and has contributed an appearance of greater animation. Manipulation, however, has been at the bottom of a great deal of the activity, and it is impossible to attribute some of the advances to strictly legitimate causes, such as the firmness of the silver market.

The most phenomenal advance of the week has been in Sutter Creek, which ro e from 61c. last Friday to $1.75@$2 to-day. Those owning a controlling interest in the company assert that they have sold enough stock to raise the $15,000 originally wanted to provide a 10-stamp mill for the property, with water facilities, etc. They claim to have no more stock to sell at any price and say that this week's advance has been caused by legitimate inquiries from those who have faith in the mine coming upon the market when no stock is to be had. As these orders are as yet unfilled, if buyers persist, it is argued that a further advance is probable.

While this may be true, an advance of over two hundred per cent., simply on "expectations," particularly in a dull market unmarked by any great speculation fever, is always suspicious. Probably the truth of the matter is, that it was decided that the stock could best be disposed of by making it active and advancing rather than by selling at a fixed price. Astoria has ruled much lower than for some time past, selling at from 4c. to 8c. No sales of Brunswick are reported. The prospects of the company are being boomed for all they are worth by its promotors and others interested in it. Plymouth Consolidated is quoted at $2.50 bid, $4.00 asked. Quicksilver Preferred sold at $37.00. We are told that the Valentine Brothers, who for some time past have held a controlling interest in the Hector Gold Mining Company, have recently sold out their entire holdings, amounting to 260,000 shares, at a price of about 35 cents a share. There are 300,000 shares in the capital stock of the company, of which 260,000 were owned by Messrs. Valentine Brothers and 40,000 were held in the East. When the last assessment was levied, it is stated that the assessment was paid on only 15,000, which is still retained here, and 25,000 shares were sold as delinquent, and went into the company's treasury. It is said that the people who have now secured a controlling interest intend to actively prosecute development work.

The only mine that seems to be alive in the Bodie camp, either in Bodie itself or the stock market, is Standard Consolidated. Late reports state that work at the mine recently has been quite satisfactory. The stock sold this week at 50c.

Local traders are awaiting with a great deal of interest, not to say anxiety, for some action on the part of those prominently interested in Comstock shares. The market both here and in San Francisco for shares in Comstock Lode mines is very quiet, but past experience causes many traders to believe that the present quietude is simply ominous of another pronounced movement of some sort. Consolidated California & Virginia has been quiet and steady from $4.50@$4.80. Among other sales of Comstock shares were Crown Point at $1.75@$1.55; Gould & Curry, $1.45@$1.49; Yellow Jacket, $2.20@$2.15: Exchequer, 60c.; Julia, 30c.; Mexican, $2.40@$2.35; Occidental, 75c. An assessment of 25c. a share has been levied upon Occidental Consolidated stock. The assessment is delinquent February 25th and the day when delinquent stock will be sold is March 24th. This assessment may be paid by local shareholders to Samuel White, Jr. Overman 80c.; Potosi $1.85; Utah 70c. to 80c. Common stock of Comstock Tunnel Company sold at 16c. to 20c., and the $500 bonds changed hands at $31 to $35. Sutro Tunnel common stock sold at 6c. The uncollected royalties due the Comstock Tunnel Company now amount to over $64,000.

The fact that several shipments of bullion from the Commonwealth mine have recently been made, as the Union Mill at Tuscarora has been running on ore from this mine since January 1st, has attracted some attention to the stock, but no sales have been made in this market this week. The closing quotation is $3.25 bid, $4.25 asked. Sales of other Tuscarora shares include Navajo at 35c.@40c.

Barcelona is quiet at 25c. bid, 35c. asked. The boom that was apparently under way in this stock about a month ago has died out completely.

Eureka Consolidated sold at $3.

Among the Arizona shares Phœnix has shown an advancing tendency, from 50c. on Tuesday to 60c. yesterday, closing at 59@60c. to-day. The rise is attributed to the favorable showing made by the report of the expert who recently examined the property, which will probably be published in the mining news columns next week. Silver King sold at 33@39c.

Horn Silver has been very strong during the week, selling at $2.45@$2.50. The annual financial statement for 1889 will probably be ready for publication shortly. Inasmuch as it is said that several unsuccessful attempts have been made to secure information concerning the present condition of the Stormont mine, we are pleased to call attention to a letter from the company's president, which is published in our mining news column, in answer to our request concerning the company. Ontario continues very strong, selling at $39 to $40.25 this week. No sales of Holyoke were made. American Flag changed hands at 4 cents.

The rise in silver should help the Colorado shares as much if not more than any others, but there has been only moderate activity in these stocks this week and prices are generally unchanged. Leadville Consolidated sold at 11c. on Tuesday, closing at 12c. asked. The company now has a cash surplus of $12,000. Little Chief is fairly steady at 23c.@25c.

As promised last week, we present in another column what is being done upon the Breece property at present. An abstract of the annual report of the Aspen Mining and Smelting Company is also given in another column. The company has on hand at present about $125,000. Its president left for Colorado yesterday, and on his return about two weeks hence will probably be able to determine definitely whether or not dividends will shortly be resumed. The stock has advanced to $7 bid, $9 asked.

We understand that the Silver Cord Company intends to erect a concentrator to treat sulphide ores, a large body of which was recently discovered in the mine. Freeland has continued active durthe week, with transactions reported at 70@75c., closing with a weaker tendency at 60c. bid.

There has been more activity in Dakota shares. Caledonia is firm at $1.40@$1.50. Stockholders are wondering whether that quarterly dividend will be forthcoming. Deadwood Terra sold at $1.45@$1.50. Home Stake is quiet at $8.50 bid. Iron Hill at 50c. Father de Smet at 35c. bid.

Alice has been very firm during the week at $1,15@$1.20, It is strange that no report of what

was done at the annual meeting on the 14th inst., in Salt Lake City, has yet been received.

El Cristo continues to advance. Sales were made during the week as high as $1.85. There is not supposed to be much of a short interest in the stock, but a great many traders are carrying it, taking advantage of the difference between cash and thirty-day quotations, which gives them a handsome interest on their money.

A gentleman interested in the St. Joseph Lead Company informs us that the company for 1889 has declared a scrip dividend of 33⅓ per cent. This practically increases the company's capital stock from $1,500,000 to $2,000,000. This scrip will not receive dividends until after returns are made on the company's common stock, but our informant says it is probable that this scrip will be redeemed at par by the company out of this year's earnings. If this is done, it will amount to a dividend of $3.33⅓ per share for two years. This scrip was issued simply to give stockholders something this year. It was impossible to declare a cash dividend, as a large amount of the company's earnings was spent in the construction of a railroad from the mines to the Mississippi River. The scrip now is quoted at par, we are informed. The regular stock, ex-dividend, is selling at $15@$15.50.

The "annual official circular" of the Consolidated Stock and Petroleum Exchange has just been issued. Among other things, it gives the following table of transactions in mining stocks on the Exchange:

Months:	1889.	1888.	1887.
January	490,732	749,315	679,411
February	713,643	468,036	762,858
March	435,025	506,335	2,419,057
April	337,500	320,200	1,172,003
May	271,288	433,350	1,169,215
June	264,382	385,765	774,141
July	196,650	919 790	845,896
August	232,560	333,108	625,326
September	308,485	336,735	636,074
October	243,685	464,002	484,246
November	376,205	274,870	640,707
December	203,070	397,609	400,796
Totals	4,163,225	5,589,205	10,659,711

Concerning the dealings in mining stocks the circular says: "The hoped for and generally expected improvement in mining stock dealings during the year 1889 has not been realized. This has not been due to less profitable returns from mining operations nor to a lack of interest among capitalists as to investment in good mines, but largely to the monetary stringency which has existed in almost every section of the country, and particularly in Wall street, during the greater part of the past year, and to the want of an assessable law in the State of New York, by and under which the officers of a company may levy assessments so as to enable them to carry forward their operations to a successful issue. It is to be hoped that such a law will be framed and passed at the present sitting of the Legislature. The dealings in mining stocks, as has been observed, have not been upon an extended scale, yet considerable purchases have been made of those which are upon a dividend basis, and this demand has caused a steady advance in their price. Those stocks which are purely speculative are also firmly held, and any little demand would cause a sharp advance in price. Some companies have been reorganized and put upon a better working basis, a basis that promises good results during the year 1890. Other companies are likely to follow their example in the near future. Very few new stocks have been placed upon the 'List' during the past year, but from the present indications we expect a large number of applications during 1890. It is reasonable to conclude therefore that our next annual circular will record a material improvement in the business of this department."

Boston.

Jan. 23.

(From our Special Correspondent.)

The market for copper shares continues fairly active and prices are firm, with an advance in a few specialties, to be followed later by others. The stocks are getting into strong hands, and it is hard to fill orders for any amount of stock at current quotations. The decline in ingot copper in London does not seem to have much effect upon the market here, and there is every reason to believe that all the copper that can be produced in this country the coming year will be needed to supply the demand. Consequently, good copper stocks will pay as well, if not better, than any other class of investments, especially at present prices.

There is very little Calumet & Hecla offered, and sales have been light, at $266@$264 ex-dividend.

Boston & Montana is very firm, at about $51@$51¼, with not so much doing in it as usual.

Tamarack is steady, at $157@$160. Sales lighter than usual.

Quincy sold at $72½, and declined only ½ to $72, although the dividend of $3 was a little disappointing, as it was expected that $4 would be the figure.

The dealings in Osceola have been quite large, and on the favorable outlook at the mine the stock has advanced from $26 to $28, and is quite strong at the latter price.

Franklin is quiet at $16¾ to $17¼, and ought to sell at $20 on its merits.

Atlantic sold up to $15⅞, and later at $14⅝, ex dividend of $1½ per share.

Kearsarge has been very active, and has advanced to $10, with only a slight reaction. The prospects of the mine are very favorable, and the stock will doubtless sell much higher if the predictions regarding the outlook are fulfilled.

Butte & Boston declined to $14¼, recovering to $14½. A morning paper says: "It is said that the decline in B. & B. is part of a plan to 'shake out' a holder of 10,000 shares who has met with financial reverses."

Allouez has been stronger this week, notwithstanding the assessment of 50c. per share called for February 20th, and after selling down to $1¼, advanced to $2, closing at $1.90.

There have also been large dealings in Santa Fe this week, the stock declining to $1.30 in the early dealings. The latest advices from the mine report ore shipments begun, and the finding of a vein of 25 per cent. copper. This started buying, and the stock sold up to $1.60, but subsequently declined to $1½.

Huron is steady at $4@$4¼, and National at $2½@$2⅝.

About 600 shares of Pewabic sold at $8½ and more is wanted at the same price.

Ridge sold at $1½, and Bonanza at 90c.

The "small fry" have been very quiet, their time not having yet come.

In silver stocks, Dunkin takes the lead, with sales of 2,750 shares at 75@70c.

Catalpa steady at 20c., and N pa Quicksilver firm at $4½.

3 P. M.—Market dull. Franklin sold off to $16. Boston & Montana sold at $49⅞@$50, ex dividend. Butte at $14⅜. Kearsarge, $9¾@$9⅞, and Osceola steady at $28.

Denver.

At a meeting of the members of the Colorado Mining Stock Exchange recently, it was decided to increase the membership from 200 to 300. These additional 100 shares will be sold for $500 each, and the $50,000 so raised will be applied, with that already on hand, as a first payment upon property upon which an exchange building will be erected, which will cost $300,000. Work upon the building will be begun about April.

At a meeting of the board of directors of the Colorado Mining Stock Exchange recently, the following amendment to the by-laws was adopted: *Resolved*, That section 1, article 10, be amended to read: "In any contract, either party may call for a margin equal to the difference between the cash and future prices, and in case the difference does not amount to 10 per cent. of the selling price, the full amount of 10 per cent. may be called for in lieu of the difference in prices," and that the words, "In any contract either party may call at any time during the continuance of the same for a deposit of 10 per cent.," be stricken out.

San Francisco.

The annual election of the Pacific Stock Board took place in San Francisco last week. Robert G. Horn was elected president; S. Otis, vice-president; R. C. Tobin, treasurer; Frank R. Moroney, secretary; and J. B. Bourne, caller.

The annual election of the San Francisco Stock Exchange was held also last week, and the following officers were elected: W. E. Norwood, president; Walter Turnbull, vice-president; T. V. Walker, caller; F. W. Hadley, secretary; George T. Marye, Jr., treasurer; George C. Hickox, W. Edwards, C. D. Laing, T. T. Atkinson, J. B. Dwyer, C. E. Anderson and C. H. Houtenbrough were elected a committee on membership.

PIPE LINE CERTIFICATES.

(Specially Reported by Messrs. WATSON & GIBSON.)

It is a distressing fact that the oil market is barren, not only of oil, but of traders. Our information from the Western oil markets is the same as can be given of our two oil markets, viz., that brokers are carrying no certificates. As a rule, too, it may be said that the few traders who hang around "the pit" are bearish, though it is the stagnation rather than any facts or fancies concerning the statistical or commercial situation that makes them bearish. For our part, we wish to be on record as predicting an important advance within a few months, not because we see any speculation, but because we believe the rapid decline in the visible supply of oil will force an appreciation of values.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 18	105⅝	105⅞	104⅞	105⅛	90,000
20	105¾	107¾	105⅛	107¾	435,000
21	108	108¼	106⅝	107⅝	266,000
22	107¾	107¾	107¼	107⅛	282,000
23	107⅜	107⅜	106	106¼	237,000
24	106⅛	106⅜	106⅛	106⅛	263,000

Total sales in barrels.... 1,573,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Jan. 18	105	105⅛	105	105	68,000
20	105⅜	107⅝	105⅜	107⅜	537,000
21	107½	107⅞	106¾	107½	532,000
22	107	107¾	107	107⅝	441,000
23	107⅜	107⅜	106	106¼	237,000
24	105⅞	106⅜	105⅞	106¼	102,000

Total sales in barrels.... 1,917,000

Lake Superior Gold and Iron Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

The prospects for the whole Lake Superior Mining District, for 1890, are bright; in fact, have never been so promising. The output of copper, iron and gold will be the largest in the history of the Upper Peninsula. There is no change in the price of gold stocks. At the Michigan they are now drifting east and west from the bottom of the deep shaft, and finding good rock both ways. They have their mine about ready to start up, and will probably be running this week.

At the Ropes everything is running smoothly. Their product for the month of December is as follows:

Bullion in gold	$7,760.89
Bullion in silver	423.32
Gross concentrates in silver (estimated)	820.00
Gross concentrates in gold (estimated)	1,560.00
Total	$10,564.21

The returns from the concentrates are not yet received, but will net about $1,200, which will leave a net profit of between $3,000 and $4,000. At this rate for the year the mine will earn a dividend of 50 cents per share (80,000 shares) which, at the present price of the stock, $2.25 to $2.50, is over twice as much percentage as the Calumet and Hecla pay their stockholders. Stocks are in good demand and are advancing.

GOLD MINING STOCKS.

Name of Company	Par value.	Lowest.	High.
Grayling Gold & Silver Co.	$25.00	$0.90	$1.00
Michigan Gold Co.	25.00	2.50	3.50
Peninsula Gold & Silver Co.	25.00	.75	.90
Ropes Gold & Silver Co.	25.00	2.25	2.50

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co.	$25.00		$65.00
Aurora Iron Co.	25 00		8.25
Champion Iron Co.	25 00	$105.00	110.00
Chandler Iron Co.	25.00	44.50	45.50
Chapin Iron Mining Co.	25.00	25.00	33.00
Chicago & Minn. Ore Co.	100.00	120.00	130.00
Cleveland Iron Co.	25.00	19.00	20.00
Germania	25.00		11.00
Jackson Iron Co.	25 00	110.00	120.00
Lake Superior Iron Co.	25 00	62.50	65.00
Milwaukee Iron Co.	25.00	6.00	8.00
Minnesota Iron Co.	100.00	80.00	85.00
Montreal Iron Co.	25.00		12.00
Norrie (Metropolitan)	25.00		67.00
Odanah Iron Co	25.00		15.00
Pittsburg Lake Angeline Co.	25.00	165.00	175.00
Republic Iron Co.	25.00	49.00	50.00

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 24.

Statistics.

Mr. John H. Jones, chief of the Bureau of Anthracite Coal Statistics, furnishes us the following statement of shipments of anthracite coal (approximated) for the week ending January 18th, 1890, compared with the same period last year:

Regions.	Jan. 18, 1890.	Jan. 19, 1889.	Difference.	
Wyoming Region. Tons	219,486	295,685	Dec.	76,199
Lehigh Region ... "	101,034	122,837	Dec.	21,803
Schuylkill Region. "	170,074	184,487	Dec.	14,413
Total	490,945	603,009	Dec.	112,415
Total for year to date	1,432,400	1,648,355	Dec.	215,95[illegible]

PRODUCTION OF BITUMINOUS COAL for week ended January 18th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

Tons of 2,240 lbs.	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R.	4,033	7,655	4,334
Cumberland, Md.	95,235	202,764	162,049
Barclay, Pa.	1,225	3,725	9,300
Broad Top, Pa.	9,313	27,878	30,510
Clearfield, Pa.	78,306	232,926	214,403
Allegheny, Pa.	22,532	57,034	58,546
Beach Creek, Pa.	*31,745	69,624	60,652
Pocahontas Flat Top.	37,939	92,936	80,101
Kanawha, W. Va.	36,373	98,473	62,328
Total	316,701	793,075	682,425

* Week ending January 14th.

WESTERN SHIPMENTS.

Pittsburg, Pa	17,252	49,309	36,563
Westmoreland, Pa	38,067	89,092	97,270
Monongahela, Pa	4,242	14,012	9,302
Total	59,561	152,413	143,135
Grand total	376,262	945,488	835,560

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending January 18th, and year from January 1st, in tons of 2,000 lbs.: Week, 285,606 tons; year, 108,178 tons: to corresponding date in 1889, 272,762.

Anthracite.

The cold weather of the week has not as yet been felt all along the line of retailers, wholesalers and general sales agents. Cold weather is what has long been needed, and, in fact, is the only thing, as we have frequently stated, that can decidedly relieve the situation, but three days of low temperature will not undo the work of three months of dullness. The excessive amount of coal at tide water, larger, perhaps, than ever before in the history of the trade at this time, and the great quantities of coal along the lines at nearly every point naturally causes a feeling of great depression and heaviness,

The movement of the coal during the week has been of the now familiar hand-to-mouth character. Although consumers are carrying light stocks, the uncertainty of the weather makes them reluctant to buy even as largely as they ordinarily would, no matter what concessions are offered.

While it may be justly urged that the low prices now ruling apply only to coal for immediate consumption, and that a sense of mutual interests involved will likely prevent any serious interruption of harmonious relations between the producing powers for next season's business, the outlook is, nevertheless, far from encouraging. With two-thirds of the calendar winter gone and with only two good coal-burning months ahead, only unexpected contingencies can produce anything like the usual briskness of trade, and it seems probable that the first of April will be reached with the market still in a more or less depressed condition, and plans for the future will naturally be entered into with little confidence. In truth, all forms of combination have been tried, and the final conclusion has been, or should be, that only the judicious regulation of supply to demand can prevent an unsatisfactory market.

The course of the market during the next sixty days, therefore, depends almost entirely upon the temperature, but all hopes of anything approaching a boom have been given up for this season.

Stocks at tide water on the 1st of February will undoubtedly show a large increase as compared with those on the first of the year. It is impossible with the market in its present condition to obtain an accurate estimate of the amount of coal at present at tide, but consumers as well as dealers realize that the wharves are crowded to overflowing. A statement from Philadelphia this week concerning the Schuylkill trade says, that between Nicetown and Port Richmond there are 2,200 loaded cars. On the main line between Nicetown and Broad Mountain there are 1,150 cars, and north of Broad Mountain there are 75 cars, making a total of 3,325 cars loaded with coal at Port Richmond and on the track between there and the mines. If production continues to accumulate in the same ratio as it has in some weeks past, it would seem that a limit to the car capacity must be reached ere long.

An interesting story comes from Pottsville to the effect that the attempt to oust the present management of the Philadelphia & Reading road is instigated by the Poughkeepsie Bridge Company, who desire to obtain the traffic of Schuylkill coal trade to New England points. If they accomplished this, the story goes, they would deprive the Jersey Central Railroad, in which Mr. Corbin is interested, of its profitable haul of coal to Elizabethport for New England consumption. Therefore, to bring about the desired end it is stated that the Poughkeepsie Bridge people are endeavoring to secure a change of management of the Reading.

Pea, buckwheat and broken sizes continue scarce and in good demand.

In order to compete with New York sellers in the New England market, it is understood that Schuylkill shippers have obtained very decided concessions on vessel freights between Philadelphia and points around the cape—concessions, it is said, that nearly equalize the difference in freight between New York and Philadelphia.

New York Retail Trade.

It was a rather short and uninteresting meeting of the Retail Exchange that was held last Friday evening. A quorum was secured about nine o'clock, with Vice-President McMonagle in the chair. The secretary of the Exchange reported that circulars had been sent out to all the members to obtain their views as to the advisability of holding the usual annual dinner. Up to last Friday night 29 members had responded, of which 16 were against the dinner or would be unable to attend, and 13 favored it. It was then resolved to give the president authority to appoint a committee of five members to make the necessary arrangements, provided the returns from the secretary's circular indicate that it will be sufficiently well attended to insure its success. Several objections to the dinner have been urged, one of which is, that the Exchange having the erection of a building in view should at present practice rigid economy. These arguments seem to have been outweighed, however, by the argument that a dinner would arouse enthusiasm among the members, and would be a fitting time at which to "boom" the building project. No ideas of false economy, it is urged, should be allowed to prevail.

Certain proposed amendments to the constitution which were then read by the secretary were laid upon the table, for consideration, to be acted upon at the next regular meeting. On behalf of the committee on prices on the west side, progress was reported, but no definite results have as yet been secured. The amendments to the constitution referred to provide for the payment of a salary of $50 per year to the treasurer, and that nominations for the annual election of officers and trustees hereafter shall be made at the first meeting in December each year. The secretary shall have prepared at the annual meeting printed ballots of same. Other nominations may also be made, if desired, on the evening of the election.

Edward C. O'Brien has been appointed receiver of the Consumers' Coal Company of No. 18 Broadway by Judge O'Brien of the Supreme Court, on the application of Mrs. Harriet C. Schenck, wife of the president of the company. She held judgments for $12,159, under which the assets were sold by the sheriff six weeks ago. The company's liabilities are stated to be about $40,000.

Messrs. Stewart Winslow & Co., wholesale dealers in coal at No. 31 Broadway, with pockets at Seventh and Fourteenth streets, Hoboken, have been closed up by Deputy Sheriff Carraher on execution for about $2,600. Stewart Winslow, the senior partner, is well known in the coal trade, with which he has been identified for many years. He was one of the promoters of the new Central Coal Company. He formed the present firm in 1885, composed of himself and his son, Benedict E. Winslow, to give the latter a start in business, furnishing, it is said, $17,000 capital. Stewart Winslow has been seriously ill for some time past, and this, together with dull trade and inability to make collections, are ascribed as the causes of their embarrassment. It is thought that an extension will be granted by the creditors. Assignee C. J. Wittenberg said this week that the liabilities were about $30,000 and nominal assets $40,000.

Bituminous.

The rather easy feeling noted in the soft coal market for the past two weeks has departed. On account of delays in deliveries, coal is again in sharp demand and there is a manifest inability to supply consumptive requirements. Cars are scarce and vessels none too plentiful. Full prices are naturally easily obtained. It is understood that the committee entrusted with the task of perfecting the plan of combining the soft coal producing interest has finally matured its scheme and will shortly present it to those interested.

While the agreement made at the first of the year to the effect that no contracts for this year's business shall be made before the 1st of February is still in force it, is believed that a number of important contracts have been virtually agreed upon betweeen buyer and seller. This belief is strengthened by the fact that important contracts for transportation to New England ports have been entered into, and it is reasonable to suppose that barges and tow-boats would not have been secured had there not been an outlet for their cargoes already provided for. Some of the producing companies, however, have steadfastly stood by their agreement.

Boston. Jan. 23.

(From our Special Correspondent.)

The anthracite coal market is slightly improved, for we have had a few consecutive winter days. Retailers have been moderately busy. I hear of a few orders being placed with wholesalers and immediate shipment desired, but these instances as yet are rare. There is more or less anthracite afloat seeking a market, shippers having preferred this course to that of piling the coal up at tidewater. This coal is likely to meet with sale at reasonable prices if the weather has any snap to it. F. o. b. prices have been very low. I hear of a sale of 15,000 tons anthracite to Bridgeport, Conn., parties at very low prices. The best stove coal can be had at $4 f. o. b. at New York, and $3.75@$3.80 is a range not unfairly quoted for outside and inferior coal. Broken and egg range from $3.50 to $3.65. Pea coal is comparatively scarce and hard to get. Stocks at tidewater are very large, notwithstanding curtailment of production. One or two of our largest Boston retailers are taking on anthracite quite freely, and as they have the reputation of taking on coal when operators must put the stuff somewhere, it would be interesting if the arrangement were known upon its financial side. Perhaps I need hardly say that there is quite a disposition here to look for lower prices, notwithstanding that f. o. b. figures are already quite low. Of course a month of cold weather would change the tendency of events, but no one expects any long spell of winter weather.

The bituminous market is featureless. A jobber told me that he visited some of his customers this week to see how the land lay, but he discovered no traces of competition, did no business on next season's account himself, and does not expect to for a fortnight to come. Probably there will be an effort to open the season at last year's prices, and it will be surprising if there is not a marked falling off in the number of delivered contracts.

Freight rates are unchanged. The retail movement, as noted above, is considerably improved. Prices are well maintained.

The receipts for the week were 22,560 tons of anthracite, 18,225 tons bituminous as compared with 23,182 tons of anthracite and 13,987 tons of bituminous for the same week of 1889. Since Jan. 1st receipts have been 55,606 tons anthracite and 32,001 tons of bituminous.

Buffalo. Jan. 23.

(From our Special Correspondent.)

The Merchants' Exchange of this city has appointed Messrs. John J. McWilliams, George H. Lewis, Joseph H. Horton, John M. Brinker and Millard S. Burns, the Coal Committee for the current year, having in charge all matters connected with that important branch of the commerce of the port.

With the exception of two days the weather has been as unseasonable as ever in this section of the States. Business in manufacturing industries continues excellent, and the daily consumption of fuel is up to a full average, but domestic wants have been light.

The supply of anthracite is slowly accumulating and the stocks of bituminous are all that the necessities of trade require.

Prices unchanged; market quoted steady.

The announcement that the well-known firm of Messrs. Andrew Langdon & Co., miners and shippers of hard and soft coal, had been dissolved, and that the offices of the firm will be closed July 1st next, was the principal, if not the only topic of interest developed during the week. This is due to the ill-health of Mr. Andrew Langdon, necessitating his retirement from business. The Enterprise Colliery, belonging to the firm, has been sold to the Lehigh Valley Coal Company, and the Grassy Island Colliery and the property of the Crescent Coal Company to Mr. J. J. Albright. Mr. T. W. White, one of the firm, will retain his interest in the Crescent Coal Company, and will remove to What Cheer, Iowa, to take the direct management of it. (This is one of the most productive bituminous coal properties in Iowa, and has a production averaging 30,000 tons per month.) Mr. C. R. Heneage, the other partner, has become connected with a Western coal house. It is understood that the dissolution of the firm and the retirement of Mr. Andrew Langdon will not prevent the continuance of the suits against the Erie Railroad Company for discrimination in rates. The absence from business circles of Mr. Langdon will be a source of deep regret to his many friends, especially under the circumstances which caused him to come to the conclusion he arrived at. He has the best wishes of the community for his recovery to health and restoration to mercantile life.

The news from the mining districts of Pennsylvania is saddening. It is to be hoped that the silver lining of the dark cloud may soon appear to cheer the hearts of the suffering miners and their families.

Pittsburg. Jan. 23.

(From our Special Correspondent.)

Coal.—I have to report a dull and unsatisfactory market; the weather for the past two days has been very cold. A continuance of the same kind would improve the demand if not the prices. The Monogahela and Ohio rivers are in good navigable condition. The shipments during the week will reach 3,000,000 bushels; prices rule about the same.

	Per 100 bushels.		Per 100 bushels.
1st pool	$4.75	3d pool	$3.90
2d pool	4.50	4th pool	3.25
Railroad coal			$5.20@$5.50

Connellsville Coke.—The question of prices has not yet been settled; both sides have their scales; which at this time are very wide apart; how it will be settled remains for the future to decide. A meeting has been called at Scottdale February 3d, until that time there will be no change in the situation. Week's shipments, 7,056 cars; previous week, 6,620; increase 430 cars. Tonnage last week 128,485 tons increase over preceding week 18,981 tons. With very few exceptions all the works in the region are running six days.

Quoted rates are: Furnace, f. o. b., $1.75; foundry, $2.05: crushed, $2.55.

Freights.—Shipments, 70c.; Mahoning and Shenango valleys, $1.35; St. Louis, $3.65; Chicago, $2.75: Cleveland, $1.70.

FREIGHTS.

From Baltimore to: Boston, Mass., 1.60; Charleston, .80; Fall River, 1.40; Galveston, 2.90@3.00; New Bedford, 1.40; New Haven, 1.40; New London, 1.40; New York, N. Y., 1.10; Norfolk, Va., .60@.65; Portland, 1.60; Portsmouth N. H., 1.60; Providence, 1.40; Richmond, Va., .75; Salem, Mass., 1.60; Savannah, 1.00; Somerset, 1.40; Williamsburgh, N. Y., 1.10.

* And discharging. † Alongside. ‡ And towage.

METAL MARKET.

NEW YORK, Friday Evening, Jan. 24.

Prices of silver per ounce troy.

Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Jan.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
18	4.85½	44⅞	97⅝	22	4.85¼	44⅝	96¾
20	4.85½	44¾	97⅞	23	4.85¼	44 9-16	97
21	4.85½	44½	96¾	24	4.85¼	44¾	97⅛

No change in allotment of Council Bills this week, but applicants received a larger percentage of their tenders. The week opened with entire cessation of London orders and a drop in quotations which was purely nominal. Upon renewal of orders price has reacted to nearly highest price last week, and closes strong.

United States Assay Office at New York reports total receipts of silver for the week 75,000.90 ounces.

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting made no change in its minimum rate for discount, and it remains at six per cent. During the week the bank gained £582,000 bullion, and the proportion of its reserve to its liabilities was raised from 35·29 to 39·91 per cent., against an increase from 41·70 to 45·83 per cent. in the same

week of last year, when its rate for discount was 3½ per cent. The Bank on Thursday gained £12,000 bullion on balance. The weekly statement of the Bank of France shows a gain of 1,675,000 francs gold and an increase of 1,450,000 francs silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .76	$ —
Mexican dollars	.76½	.77½
Peruvian soles and Chilian pesos	.72	.73½
English silver	4.83	4.88
Five francs	.94	.95
Victoria sovereigns	4.85	4.88
Twenty francs	3.85	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.82	4.87
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

Copper.—While the tone of the market has been comparatively quiet during the week prices have been firmly supported, and no concessions have been made either by the producing companies themselves or by dealers, and the quotations remain unaltered at 14¾c.@15c. for Lake, and 13@13⅛ for casting copper.

The consumption of all sorts still goes on at a satisfactory rate, although, on the whole, the demand is not quite so heavy as during the past two months. Manufacturers, however, continue very busy, and the demand for wire bars is so large that the Lake companies are required to turn out a considerable portion of their production in that form, clearly indicating the rapidly expanding requirements for electric purposes. We refer to our editorial remarks on another page on the enormous consumption of copper in 1889.

Reports from Europe show that for actual bona fide trade purposes high prices continue to be paid for Lake, Electrolytic, and Wallaroo copper, but in the more speculative descriptions of unrefined copper a rather weaker tendency has become apparent during the past week. No change in the London market for Chili Bars and G. M. B. copper. The closing quotation at the end of last week stood at £50 spot, and £50 10s. three months, while during the current week values have gradually given way to £48 10s. spot and £49 5s. three months. This decline is understood to be caused principally by heavy prompts falling due about this time, compelling speculative holders to realize, but the large amount of business reported in futures would indicate that these speculators, while parting with their spot copper, are at the same time buying in again for future delivery so that the operations in question simply amount to a process of "carrying over." The high rate ruling for money at present has also a certain influence on all the speculative markets. For refined sorts the latest quotations are English Tough, £56 10s.@£57; Best Selected £58@£59; Strong Sheets, £65 to £66. Early in the present month about 1,500 tons Anaconda matte and some Boston & Montana matte sold at 10s. 6d., but later on some sales took place at 10s. 3d., at which figure further lots are offered.

The exports of copper from New York during the last week were as follows:

		Lbs.	
To Liverpool—	Copper Matte.		
By S. S. Italy	2.106 sacks	239,046	$10,600
	Copper.		
By S. S. Italy	425 bars	185,092	20,300
"	60 bars	26,000	2,900
To Rotterdam—			
By S. S. P. Calland	90 casks	112,500	11,250
To Havre—			
By S. S. La Normandie	189 casks	236,250	26,580
To Hamburg—	Copper bullion.		
By S. S. Rugia	17 bars	1,062	2,700

Tin.—Our market has exhibited rather an unsettled and nervous feeling throughout the week. At one time sellers were plentiful and shortly afterward buyers were bidding high prices, and no sellers were to be found. On the whole very little business was transacted, but such sales as took place were at somewhat high prices. The market has fallen into a condition of considerable dullness and inactivity and the closing quotations to-day are Spot, 20.65; February, 20.70; March, 20.75.

Lead.—Quotations have to be lowered. During the week several lots have been sold at low prices and it is understood that these are part of the old holdings. With the wintry weather now setting in we come to the dullest time for manufacturers, especially of pipes, and with the lessening demand prices have dropped, and sales have taken place at 3·82½, andthe tone at the close is rather depressed.

The European markets are in a similar condition to our own, and in London the quotation for Spanish lead has, during the week, declined from £14 to £13 5s., and £13 10s. for English, with sellers over.

The St. Louis Market.—John Wahl & Co. telegraph us as follows: Lead is in *statu quo*. On account of easier seaboard markets, slight concessions have been made here. Common sold as low as $3.55, and argentiferous at $3.60. Buyers are still content to buy from hand to month, and are apparently not alarmed about any advance in the near future.

The Chicago Market.—Messrs. Everett & Post telegraph us to day as follows: The activity of last week has given place to quietness, but prices are entirely unchanged. 3·65c. is asked for prompt shipment, 3·67½c. for February; sales foot up less than 500 tons at and aronnd 3·67½c.

Spelter is rather irregular at 5·35@5·40 for prime Western. The foreign quotations are unaltered.

Antimony remains firm, and the scarcity of supplies is aggravated by the recent very stormy weather, some steamers bringing the metal being considerably overdue. When these arrivals come to hand it is understood that the greater part of the metal will be shipped directly to consumers. We quote: Hallett's at 20¼@20½c.; Cookson's at 29½@30c.

Nickel is quiet, uninteresting and unchanged at 75@80c.

Quicksilver remains at £9 15s. in London and $49.50@$50 in New York. Jobbing quotations are 66@67c. per pound.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 24.

Pig Iron.—A quiet steadiness prevails in the pig-iron market. Both sellers and buyers are well supplied—the one with orders in hand and the other with iron. Naturally, therefore, the volume of new business current is very light, but there is no pressure to sell, nor are there any other indications of actual weakness. Prices seem to be firmly maintained at about $20 for No. 1 foundry, $19 for No. 2 and $18 for gray forge. At the same time, it must be admitted that the future of the market depends largely upon the ability of all producers to maintain prices firmly during the next 30 days, during which period there can hardly be expected the large demand which characterized the months of November and December. While the Thomas Iron Company may have sold its product so largely ahead as to be practically out of the market, this is not a fair criterion of the strength of the entire market. The two possible elements of weakness seem to be the overproduction and the financial inability of some of the Southern makers to firmly hold the ground that has been gained. If a strong consumptive demand sets in agains shortly, however, these dangers will be counteracted, and a continued tendency toward high prices will be assured.

The American Iron and Steel Association ha compiled the following valuable statistics:

The total production of pig iron in the United States in 1889 was 7,604,525 gross tons, against 6,489,738 gross tons in 1888, an increase of 1,114,787 gross tons, or over 17 per cent. Reducing gross to net tons, our production in 1889 was 8,517,068 net tons, against 7,268,507 net tons in 1888. When it is remembered that our production in 1888 was the largest in our history down to that time, the magnitude of our production in 1889 will be more fully comprehended. The production of the first half of 1889 was 3,662,486 gross tons, and the production of the second half was 3,942,039 gross tons, an increase in the last half of 279,553 gross tons. The increased production in the second half of 1889 was wholly due to the increasing demand for Bessemer pig iron.

The stocks of pig iron which were unsold in the hands of makers or their agents on the 31st of December last, and which were not intended for the consumption of the manufacturers, amounted to only 277,401 net tons, against 336,161 net tons at the close of 1888. There was, however, an increase in stocks during the first half of 1889, the figures on the 30th of June amounting to 563,286 net tons. There was, therefore, a considerable decrease in stocks in the last half of the year. In addition to the stocks above noted, the American Pig Iron Storage Warrant Company advises us that at the close of 1889 there were 36,200 gross tons, or 40,544 net tons, of pig iron in its warrant yards.

The production of pig iron in 1889 according to the fuel used was as follows, compared with the production of the two preceding years:

Fuel—Net tons.	1887.	1888.	1889.
Bituminous	4,270,635	4,743,989	5,952,414
Anthracite and coke	1,919,640	1,648,214	1,575,996
Anthracite alone	418,749	277,515	344,358
Charcoal	578,182	598,789	644,300

The production of pig iron in Great Britain in 1889 is estimated at 8,300,000 gross tons against our 7,604,525 tons.

Next week we shall publish full extracts from this report.

Scotch Pig.—Cable advices from the Glasgow market report that speculation in pig-iron warrants on the other side has been more limited, but there is still considerable realizing, and prices continue rather weaker than they were some weeks ago. It is interesting to note the success of the system of dealing in warrants on the London Metal Exchange. A foreign authority says that it is believed in some quarters that an effort will be made to remove the center of warrant speculation from Glasgow to London, thus taking the market out of the hands of a certain clique which is said to have controlled the Glasgow dealings.

Spiegeleisen and Ferro-Manganese.—A number of transactions are pending, but during the week under review very little actual business has been closed. Quotations remain nominally at $37 @$38 for spiegeleisen, 20 per cent., and all the way from $95@$100 for ferro-manganese, 80 per cent. Foreign advices continue to complain of the great scarcity of manganese ores.

Steel Rails.—Current inquiries are rather light, and probably 10,000 tons will cover the amount of business that has been closed during the week in 1,000 and 2,000 ton lots. Sellers, however, emphatically deny that there is any weakness in the market, and as evidence of the truth of their protestations announce that they have advanced prices to $36 at mill. While this may be the asking price, it appears as yet to be more or less nominal. The statement of the Board of Control shows that about three-fourths of the allotment for the first quarter of the year had already been sold on January 1st. The allotment was 1,060,000 tons, and up to January 1st 746,895 tons had been sold. The balance to be sold on the first of the month was, therefore, 313,105 tons, a considerable portion of which has been contracted for during the present month. While, as noted last week, the outlook for new railway enterprises is not particularly bright this year, a very liberal demand for renewals from large roads is expected, and as yet very few of the leading lines have contracted for their full quota of rails for the year. Last year the Pennsylvania road purchased about 82,000 tons of rails, and for this year's work has as yet only ordered 61,539 tons. A number of mills say that they intend to ask for an increase in their allotment. The Board of Control's statement for 1889 shows that the output of heavy rails last year was very accurately estimated in these columns on the 1st of January. The statement is as follows:

STEEL RAILS SOLD AND SHIPPED, FIFTY POUNDS AND UPWARD, FOR 1888 AND 1889.

	1888. Gross tons.	1889. Gross tons.
North Chicago	161,945	.....
Union	126,016	.....
Joliet	114,675	.....
Illinois Steel Company	402,636	401,795
Carnegie Bros. & Co	138,946	267,461
Scranton Steel Company	136,029	155,814
Lackawanna Coal and Iron Company	128,310	139,141
Bethlehem Iron Company	85,448	121,262
Pennsylvania Steel Company	121,960	103,931
Cambria Iron Company	82,363	64,947
Cleveland Rolling Mill Company	29,940	14,807
Troy Steel and Iron Company	25,110	2,280
Western Steel Company	39,168	.....
Worcester Steel Company	6,569	.....
Springfield Iron Company	3,705	.....
Totals	1,200,184	1,271,458

In this statement the output of light rails, which is estimated at about 150,000 tons for the year, is not included, and the product of the Allegheny Bessemer Company, of Pittsburgh, is also not embraced. The product of the latter company last year is estimated to be about 60,000 tons, which would make the total product of rails for last year approximately 1,480,000 tons.

Structural Iron and Steel.—The lull in this department is more marked than in the other branches of the trade, but there is no pressure to sell and thus any appearance of actual weakness is avoided. The high prices ruling for steel continue to divert a great deal of demand to iron. Ruling prices are as follows:

Delivered on wharf, bridge plate, 2·40c.; iron angles, 2·40c.; iron tees, 2·80@2·85c.; steel angles, 2·70c.; beams and channels on wharf, 3·1c.

Steel plates on wharf: Tank and ship, 2·75c.; shell, 3.10c.; flange, 3·25c.; fire-box, 4·25c.

Iron plates on wharf: Common tank, 2·35c.; refined, 2·45c; shell, 2·6c.; flange, 3·5@3·7c.; extra flange, 3¾@4c.

Bar iron at mill is quoted at 1·8@1·9c. for common and 1·9@2c. for refined. Deliveries from store are quoted as follows: Common, 2·1c. base; refined, 2·3c. base; "Ulster," 3.10c. base; Norway bars, 4·25c.; shapes, 5·25c., and Norway nail rods, 5·72c.

Merchant Steel.—Prices are as follows: Best English tool steel, 15c. net; American tool steel, 8@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.

Pipes and Tubes.—The association of wrought-iron pipe and tube manufacturers met in Philadelphia this week, and reduced discounts 2½ per cent. throughout the list. This advance in prices has been expected for some time past. According to the revised schedule, rates of discount on wrought-iron pipe are as follows: Butt welded, plain and tarred, 47½ per cent. discount; galvanized, 40 per cent. discount; lap-welded, plain and tarred, 60 per cent. discount; galvanized, 47½ per cent. discount. A discount of 52½ per cent. is allowed on boiler tubes of 4 inches and larger, 50 per cent. on tubes from 2 to 4 inches, and 45 per cent. on 1¾ inches and smaller.

Cast-iron pipes remain at $25@$28, according to size.

Rail Fastenings.—Very little business is being done in this line at present, as very little track is being laid at this season. Asking prices are nominally unchanged, but a purchaser with a large order in hand could probably obtain concessions. Asking prices are about as follows: Spikes, 2·25c.; angle fish plates, 2·15@2·25c.; bolts and square nuts, 3c.; hex. nuts, 3·25c. The Nut and Bolt Manufacturers' Association met in Pittsburg on Saturday last, and, after discussing prices, decided to make no change in their list. As is usual at

such conventions, trade was reported active and the outlook encouraging.

Old Material.—Old iron tee rails continue quiet but firm at $28@$29. Double heads are quoted nominally at $30. No. 1 wrought-iron scrap is held at $24.

Louisville. Jan. 21, 1890.

(Special report by Messrs. HALL BROS. & Co.)

There has been some increase in the volume of business during the past week. Some prominent concerns have placed orders to cover their contracts for supplies, which comprise various grades and qualities of iron, for early and future delivery.

Prices have remained about the same, with a tendency on the part of some of the companies to shade on round business.

Hot Blast Foundry Irons.		
Southern Coke	No. 1	$19.00@ 19.50.
" "	No. 2	18.75@ 19.00.
" "	No. 3	18.00@ 18.75
Mahoning Valley, Lake ore mixture		20.00
Southern Charcoal	No. 1	18.50@ 19.00.
" "	No. 2	18.00@ 18.50.
Missouri "	No. 1	19.50@ 20.00.
" "	No. 2	19.00@ 19.50.
Forge Irons.		
Neutral Coke		17.50@ 18.00.
Cold Short		16.75@ 17.00.
Mottled		15.50@ 16.00.
Car Wheel and Malleable Irons.		
Southern (standard brands)		23.50@ 24.50
" (other brands)		19.50@ 20.50
Lake Superior		23.00@ 23.50

Philadelphia. Jan. 24.

[From our Special Correspondent.]

Pig Iron.—Makers and brokers representing makers of pig iron confess to some little disappointment to-day at the irregular demand of the past few days. There is no actual drop in prices, and no authority in the trade here admits a drop on good brands as probable, yet there is not that tightning of the lines that we had expected. A number of buyers who have some iron on hand, or contracted for, but not enough to see them through work in hand, are not buying or making any effort to buy. Their reason is, that if there is any weakness coming, they will give the market a chance to catch it. Iron has been offered here from Southern and Western sources, but more with the view of seeing what buyers would agree to pay for future deliveries. Careful inquiries fail to uncover any important transactions in these directions. Choice brands of No. 1 foundry iron could be had at $20.50 for forward delivery. Several standard brands can be had at $20. A few inferior brands might be had at $19.75. No. 2 rules at $19 to $19.50, with an opportunity for inferior makes at 25@50c. below. Gray forge is steady at $18, and the heavy consumption in progress, and the heavy demand for finished iron in sight, are helping to keep prices strong at that figure.

Spiegel.—Quotations are $37.50@$38.50.

Blooms and Billets.—A few December buyers who failed to secure all the material needed have made efforts this week to finish buying, but have not succeeded. There are two difficulties in the way. First, makers are oversold, and when they do name prices they name too high figures. As high as $40 has been quoted for billets, but buyers think $38 is an outside figure.

Muck Bars.—The market is decidedly in favor of the manufacturers. The lowest price for this week for a poor article was $31.50. The outside figure for a guarantee bar is $32.50. Manufacturers who are watching the condition of the market among buyers expect to have a good many orders within the next two or three weeks, as stocks are low.

Merchant Bar.—A number of manufacturers are nearing completion of their fall orders, and have been disappointed at the fact that expected buyers have not been rushing after them. The buyers, by way of explaining this seeming dullness, say that the rolling mill capacity of this market is abundantly able to take care of their requirements, and that they can give an order this week, and get iron next week. This is true in some places, but there are some mills sold away ahead. And yet, the bar iron makers have not openly offered any concessions, or admitted that any are likely to be made. Average rates for refined, 2c.

Nails.—The fact that building demand had subsided, and that stocks have begun to accumulate, has led to some quiet shading on nail quotations by all makers. It was intimated to-day that there is no difficulty in getting iron nails at $2. The downward tendency has naturally affected demand, as buyers want to see what there is in it.

Skelp Iron.—Grooved skelp is 1·95c., and sheared, 2·15 to 2·50.

Wrought Iron Pipe.—There is an enormous amount of work going on in the manufacturing establishments using wrought iron pipe and tubes. The pipe mills are once more picking up a good deal of business, but most of the orders are small. There is no weakening in discounts, and will not be until after the coming meeting, if then.

Sheet Iron.—The sheet iron makers have been able to hold their grip upon the market, and a good deal of business has been done this week in carload lots, which goes to show that buyers of all kinds of sheet and galvanized iron are anxious to keep well supplied. Best refined, 3·10 to 3·70. Discount on best galvanized, 60 per cent.

Merchant Steel.—The merchant steel makers are all increasing their business for early spring delivery. The tendency in prices for material is still upward, and merchant steel quotations show it.

Plate and Tank Iron.—Two or three large buyers are in the market this week, and by Saturday negotiations will be concluded for about 2,000 tons, according to anticipations to-day. It is not admitted that this new business will be put through at anything less than quoted rates, but there is a little probability that it will. While iron tank is not quoted below 2·35, buyers who are here think they will be able to do one-tenth better. Shell, 2·60@2·70 for iron, and 3·25 for flange. The disposition among the larger buyers is to let the manufacturers show what strength there is in the mar ket.

Structural Iron.—The inquiries which have been made frequently of late for bridge material, have begun to yield results, and two or three good-sized orders were placed within 48 hours. These orders are simply preliminary to others which manufacturers think they will have on their books within 10 days. The total amount of the business in sight is said to be about 5,000 tons. Angles, 2·35; bridge plate, 2·30; tees, 2·80; beams, 3·10.

Steel Rails.—Steel rails are quoted to-day at $36, but the orders taken at this figure were for small lots. It is still claimed that $35 would be taken for round lots, and the claim is made to-day by one or two parties representing buyers that a square offer of $34.50 would not be refused.

Old Rails.—The market is in most unsatisfactory shape. Quotations, $28 for tees.

Scrap.—No. 1 scrap has weakened, but not because of unwillingness among buyers to take scrap at what they can afford to pay for it. No. 1 is $25 here; machinery scrap, $15; old fish plates $28.50@ $29.

Pittsburg. Jan. 23.

[Fro m our Special Correspondent.]

Raw Iron.—To a certain extent our remarks of last week wouid be found very appropriate on this occasion. The falling off in the demand for raw iron, that was expected about the first of the new year, was postponed until the middle of the month. Transactions show a material falling off, simply because consumers have for the most part a good supply on hand, and many round lots contracted for that have not been delivered. These parties are of the opinion that by holding off for a time prices may show a declining tendency, and to a certain extent this is no doubt a correct view. Occasionally we hear of an off lot being sold below current rates; at the same time, if the facts were all made known, it would be discovered that taking the quality of the iron into consideration, the iron was sold for its full value. While matters of this kind may have an effect on certain parties, there are others who take an entirely different view of the matter. A few days since a sale of Bessemer was made below current rates, but the facts in the case were withheld, which gives the affair a suspicious look. The price was to be kept secret; at the same time the price and conditions have been pretty well venti ated. While prices of outside and unknown brands may be shaded, Pittsburg furnace men take no stock in such matters, refusing to sell below rates that have been current for some time. Consumption is going on at a rate exceeding anything before dreamed of. It will not be long before consumers will be in search of fresh supplies. Of raw iron there are no stocks to speak of; in fact, most furnaces are oversold, and could be much more so were owners inclined to accept the offers made for delivery during the last half of the year. The fixing of prices and acceptance of orders for delivery after July 1st is the pivot on which the crude iron market turns at present. The coke question is still unsettled. A meeting has been called for February 3d, when both sides will present scales and ventilate their views on the coke question. Certain descriptions of iron have exhibited a weaker feeling. Muck Bar, for some unaccountable reason, has declined 50c. per ton. Scrap material firm, with a good demand. Blooms and Billets—The demand was less active; sales ahow a slight decline in values. Fer o-Manganese shows a declining tendency. Skelp Iron firm. Sheared sales show an advance. Old Iron and Steel Rails maintain the rates current last week.

Coal and Coke Smelted Lake Ore.	
2,500 Tons Bessemer	$24.00 cash.
2,000 Tons Bessemer	24 00 cash.
1,000 Tons Gray Forge	18.00 cash.
1,000 Tons Bessemer	23.85 cash.
1,000 Tons Gray Forge	18.35 cash.
1,000 Tons Gray Forge, City Furnace	18.50 cash.
500 Tons Bessemer	24.50 cash.
500 Tons Mill Iron	18.25 cash.
200 Tons Mill Iron	18.10 cash.
1,500 Tons Bessemer	23.80 cash.
100 Tons No. 2 Foundry	19.00 cash
100 Tons No. 1 Foundry	19.75 cash.
Coke, Native Ore.	
250 Tons Gray Forge	18.00 cash.
80 Tons No. 2 Foundry	19.00 cash.
50 Tons Silvery	18.00 cash.
50 Tons Silvery, Extra	21.00 cash.
50 Tons No. 1 Foundry	20.00 cash.
Muck Bar.	
1,500 Tons Neutral	30.65 cash.
1,000 Tons Neutral	30.00 cash.
1,000 Tons Neutral, January	30.50 cash.
Steel Slabs and Billets.	
2,000 Tons Billets and Slabs	37.00 cash.
500 Tons Billets	36.75 cash.
500 Tons Billets	36.50 cash.
Steel Wire Rods.	
380 Tons American Fives	51.50 cash.
300 Tons American Fives	52.00 cash.
New Steel Rails.	
7,000 Tons New Rails	35 00 cash.
4,000 Tons New Rails	34.75 cash.
Spiegel.	
350 Tons, 20 per cent., f. o. b., New York	36.75 cash.
Bloom Ends.	
300 Tons Bloom Ends	26.00 cash.
250 Tons Bloom Ends	26.00 cash.
Skelp Iron.	
325 Tons Sheared Iron	2.25 4 mo.
250 Tons Wide Grooved	1.95 4 mo.
200 Tons Narrow Grooved	1.87½ 4 mo.
Ferro-Manganese.	
100 Tons 80 per cent. f.o.b. New York	95.00 cash.
75 Tons 80 per cent. f.o.b. Baltimore	94.00 cash.
50 Tons 80 per cent. f.o.b. New York	92.50 cash.
Old Iron and Steel Rails.	
800 Tons American Ts	28.00 cash.
500 Tons Steel Rails	24.00 cash.
Scrap Material.	
500 Tons No. 1 Wrought Scrap, net	24.00 cash.
250 Tons Iron Axles, net	30.00 cash.
250 Tons No. 1 Wrought Scrap, net	24.00 cash.
200 Tons Leaf Steel, net	25.00 cash.
200 Tons Crucible steel, net	31.00 cash.

Prices.

Coke or Bituminous Pig—		20% Spiegel at seaboard	36.00@36.75
		Muck-Bar	30.00@30.50
Foundry No. 1	$20.00@20.25	Steel Blooms	36.00@36.50
Foundry No. 2	19.00@19.25	Steel Slabs	36.00@36.50
Gray F. No. 3	18.00@18.50	Steel Cr'p Ends	25.00@26.00
" No. 4	@17.50	Steel Bl. Ends	25.00@26.00
White	17.00@17.25	Ferro-Man., 80%, seaboard	92.50@94.00
Mottled	17.00@17.25	Steel Billets	36.50@37.00
Silvery	18.25@21.00	Old Iron Rails	28.00@28.50
Bessemer	23.50@24.50	Old Steel Rails	23.00@24.00
Low Phos	27.50@28.00	No. 1 W. Scrap	23.00@24.00
Charcoal Pig—		No. 2 W. Scrap	@19.00
Foundry No. 1	23.50@24.50	Steel Rails	35.00@35.25
Foundry No. 2	22.00@?.75	" light sec	35.00@38.00
Cold-Blast	25.00@?9.00	Bar Iron, nom.	1.90@ 1.95
Warm Blast	24.00@25.00	Iron Nails	2.50@ 2.30
10 + 12% Spiegel at seaboard	30.00@32.00	Steel Nails	2.50@ 2.30
		Wire Nails	2.90@3.00

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Jan. 24.

Heavy Chemicals.—Caustic soda has continued very firm in this market this week. Advices from the other side report a similar condition of affairs abroad. For the higher tests, 70 to 74 per cent., in round lots, from $2.50 to $2.35 is now quoted; for smaller quantities buyers would probably have to pay $2.60. Sixty per cent. as yet has not risen proportionately with the higher tests. Quotations are firmer at $2.65@$2.70. The advance undoubtedly has been somewhat a surprise both to buyers and sellers here. The only way in which the sudden scarcity of supply on the other side can be accounted for, is, that a number of the works must have reduced greatly their output.

The alkali market has more than kept pace with that for caustic soda. The termination of the glassmakers' strike before long now seems probable. The communication of the Eastern manufacturers to the Western association, asking the latter to stop work, to which we referred last week, was in vain. The Western manufacturers replied that they had contracts for glass which they were obliged to fulfill, and it was therefore impossible for them to suspend operations. Upon receipt of this reply, a number of the Eastern manufacturers, fearing that it would be impossible for them to hold out longer, notified the Eastern association that they would begin work shortly. If this action becomes general, the men will have won a victory, and a general resumption of work will call for more ash and alkali.

This week, for carbonated soda ash, 48 per cent., about $1.50 has been quoted, and latterly, in consequence of cables received from Liverpool yesterday afternoon, $1.52½ has been asked. For 58 per cent. refined alkali, $1.37½@$1.42½ is quoted. Caustic soda ash is nominally the same as carbonated, but at these figures it is more or less nominal, the demand being very light.

Bleaching powder has sympathetically improved somewhat, but quotations show no appreciable advance, and spot lots can probably be obtained at from $1.45 to $1.50.

Hyposulphite of soda continues to be quoted from $1.50 cwt., in casks, and $1.16 kegs.

Acids.—Business generally continues very quiet, and, in truth, some manufacturers are inclined to call the market dull. It is a somewhat noteworthy coincidence that this state of affairs prevails in a number of industries, all of which experienced an unusually large demand in November and December, and a slackening of trade during the present month. This probably accounts for the comparative dullness in the acid trade just now. There has been no abatement, however, of confidence as to a prosperous future. The consumption of sulphuric acid throughout the country yearly shows a large increase, and its importance as a factor in numerous manufacturing industries is steadily becoming more clearly established.

The question of the imposition of a duty upon

acids, particularly a half cent a pound on sulphuric, is still the principal question of interest in the trade. An interview was obtained this week with a gentleman controlling certain acid works in Canada, against which the present attempt to have a duty imposed is said to be directed. He states that his importations of acid have been very small and probably will always be so, as he has large American interests in the same business which he desires to protect and with which he can supply American trade without being obliged to import acid from Canada. It is, therefore, he said, a matter of little consequence to him whether a duty be imposed or not. He acknowledges that he has for a number of years past delivered seven or eight carloads of acid a year to a Providence consumer from his Canadian factory, but this he states has been done merely as a matter of convenience as the same acid could be delivered as well from his local establishment. While he contemplates enlarging his works on the other side of the border he states that this enlargement is necessitated solely by the increase in Canadian consumption and is intended only for supplying the Canadian market. He has never sold a carboy of acid in Buffalo and the only New England point to which he has delivered acid is Providence, with a single exception of an instance in which he delivered two and a half or three carboys of acid to a man at a fair in St. Johnsbury, Vt., who wanted to generate hydrogen gas for a balloon ascension. He suggests that possibly this effort to impose a duty upon acid is instigated by the New York Chimical Club for the purpose of preventing any importations of acid if the Knickerbocker Chemical Company advances the prices.

This gentleman says that he now has no more thought of joining this so-called combination than he had some months ago, when an interview with him was published in these columns. He says that from interviews with the president of the Knickerbocker Chemical Company he believes that it ultimately hopes to advance prices, and as he is not in favor of such an advance, he prefers to remain outside of the combination and to be entirely free and unrestricted in his efforts. He says that this so-called combination is nothing more than an association of manufacturers. It cannot control the market prices, he says, because it does not include all of the large manufacturers, those outside having a larger capacity than those included.

The illness of the president of the Knickerbocker Chemical Company has prevented the executive committee of the board of directors from settling upon a number of questions of detail, but it is expected that very little more time will be lost

Fertilizing Chemicals.—There have been a number of large sales of dry blood this week. Prices, however, continue very low, and in fact they have been for some time past. It is no secret that quotatiions have been made at much lower figures than any that have been published. This week we have lowered our prices on ammoniacal materials somewhat. Ruling prices may be quoted about as follows: Azotine, $1.90@$2.00; dried blood, low grade, $1.85@$1.92½; high grade, $1.92½@2.00. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $20@$21 per ton, and low grade, 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $18@20. Fish scrap, $21.50@$22 per ton, f.o.b. factory. Sulphate of ammonia at $3.12½@$3.17½ per cwt. Concentrated tankage, $1.90@$2.00. Refuse bone-black, guaranteed 70 per cent. phosphate, $20 per ton. Dissolved bone-black is 90@92½c. per unit for available phosphoric acid, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $5.75 per ton; kiln dried, $6.75@$7 per ton, both f.o.b. vessels at the mines. Freights by sail from Charleston to New York, $3@$3.25 per ton. Charleston rock, ground, $11.50@$12, ex-vessel at New York.

Double manure salts, 48 to 51 per cent. sulphate of potash, for 1890 shipment, $1.12½ per 100 pounds; high grade manure salts, basis 90 per cent. sulphate of potash, $2.37½ per 100 pounds. These prices are for invoices of 50 tons, based on foreign analyses and foreign invoice weights, ex-ship, New York.

Muriate of potash is quiet at syndicate prices. So far as can be learned no re-sales have been made.

Kainit.—For the small stock on the spot $11 per ton continues to be asked.

Brimstone continues to rule low at $19@$19.25 for best unmixed seconds on the spot, $18.50 for the same to arrive, and $18 for thirds to arrive.

Nitrate of soda continues quiet at $1.90@$1.92½ on the spot and $1.80 for futures. Mr. E. B. Nichols' statistics, issued under date of the 18th inst., show that arrivals ending on that date are 34,280 bags, of which 25,821 bags were received at this port. Arrivals for the corresponding period in 1889 aggregate 28,610 bags, and deliveries for the past fortnight of this month were 26,672 bags. The stock in store or afloat in Atlantic ports on the 15th was increased to 59,334 bags against 51,726 bags on January 1st, 1890. On January 15th, 1889, a year ago, there were 88,677 bags on the spot. The visible supply is estimated at 371,334 bags against 288,177 bags at the same time last year, and 282,054 in 1888. In his review of the market for the fortnight, Mr. Nichols says that in consequences of heavy arrivals there has been some competition among some of the sellers and lower prices than usual have been accepted. Considerable business has been done for forward deliveries extending into June shipments at $1.75@$1.80. The report of visible supply does not inciude anything beyond March or April shipments. In regard to the matter of restricting production, to which reference was made in these columns last week, Mr. Nichols says, "The producers are still resolving but have not yet resolved according to last accounts."

NOTES OF THE WEEK.

"Sludge" acid is a topic of considerable interest just now, and before the end of the year will probably assume considerable importance as a factor in both the fertilizer and acid trades.

In regard to an imposition of a duty on acids, which is agitating the local acid trade, it seems to be generally believed as a matter of principle that it would be simply justice to American manufacturers to have such a duty imposed.

Liverpool. Jan. 8.

(Special Report by Messrs. J. P. BRUNNER & Co.)

Chemicals.—In most cases heavy chemicals show an upward tendency, and a good business passing in some lines.

Soda ash is in good demand. Sales have been made for America, January, February delivery at 1⅛ to 1⅜d. for carbonated, and 1½d. for caustic ash. The market is now pretty well cleared for the next two months, buyers having a difficulty in filling orders.

Soda crystals improved, and held for £2 15s. to £2 17s. 6d. per ton. Values on the Tyne have also been advanced in consequence of the announcement that the Jarrow Chemical Company intend to close their Tyne Dock Works.

Caustic soda is again dearer, but orders are coming in less freely, the advance having apparently checked business. Sixty per cent. scarce, and held for £6 15s. to £6 17s. 6d., and in some cases these figures have been paid for special brands. Seventy per cent. is firm at £7 12s. 6d. to £7 15, and only offered to a limited extent. Seventy-four per cent. is now quoted at £8 7s. 6d. to £8 10s., and sales reported to-day of 300 drums for January-February delivery, at the lower figure, for the States. Seventy-six per cent., £9 5s. to £9 10s.

Bleaching-powder.—For the home trade a large business has been done, with the result that prices for softwood packages have been advanced 7s. 6d. to 10s. per ton, and buyers have paid this advance. For hardwood there has been little inquiry, and some sellers are offering, to a limited extent, at £5 10s. to £5 12s. 6d., but one maker today reports having sold at £5 15s. direct to the States. This article is now in small compass for January delivery.

Chlorate of Potash in active request and large sales made for first three months at 4½d, while there is nothing offering at the close at under 4⅝d. and makers are now well sold for January to March.

Bicarbonate Soda is scarce at £5 5d. per ton and upward, for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of Ammonia quiet at £12 2s. 6d. per ton; nearest spot value for good gray, 24 per cent., f.o.b. Liverpool.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Jan. 24.

Brick.—It has been a quiet and uneventful week in this market. No new features of interest have developed. The relative positions of supply and demand remain the same, and prices have not varied 25 cents a thousand. The top quotation for Haverstraws remain at about $7 per M, although we understand that early in the week one cargo was disposed of at a slightly higher figure. Occasional lots of Jerseys are coming forward at unchanged prices, and now and then a cargo of Long Island brick finds its way into market. Pales are still quoted at about $3.25, and are in slow demand. The cold weather of the past few days has caused dealers to delay, expecting the closing of navigation on the Hudson; but it will probably be some days before intercourse between here and Haverstraw is prevented. As to the demand, if any change at all is to be noted, it is that the supply carried over from day to day this week has not been so large as last, but this has been more or less accidental, and the tone of the market is not at all improved.

We referred laft week to the current rumor that efforts were still being made to form a combination of brick manufacturers, or something of a "trust" character. We are now informed that the foundation for these rumors is, that Mr. E. De F. Shelton, a promoter of industrial enterprises in this city, has secured options upon some thirty or forty brick yards along the Hudson, in New Jersey, and on Long Island. He represents both English and American capitalists, he says, who intend to select some twelve or fifteen of the most desirable properties to be controlled by a single stock company with a capital of perhaps $1,500,000, to make bricks for the market, meeting competition wherever it may be necessary. Mr. Shelton believes that the company will be organized successfully, and as the options include the entire plant and property of the brick yards, there will be no difficulty in commencing operations as soon as the frost leaves the ground, if the company's organization be successfully accomplished by that time.

Some idea of the magnitude of the brick-making industry in the United States can be gained from the following table, which shows the number of bricks used in twelve cities during the year 1888, the total of which is 2,730,000,000. These figures are, of course, far from complete: New York City 1,000,000,000; Chicago, 440,000,000; Philadelphia, 300,000,000; Boston, 150,000,000; St. Louis, 200,000,000; Cincinnati, 100,000,000; Washington, 125,000,000; Cleveland, 84,000,000; Pittsburg, 80,000,000; Omaha, 80,000,000; New Orleans, 36,000,000; Indianapolis, 35,000,000. The capital invested in the operation of this business is immense. The 300 delegates to the National Brick Manufacturers' Association, who met in Philadelphia several days ago, represented a capital of over $150,000,000, which is but about half of the total sum used in the United States in carrying on this great business. Having visited and studied the modern brick factories of England, Holland, Belgium, France and Germany, the authority for the above figures says that "in all the countries, ancient and modern * * * there is none in which the business of brick-making is carried on so extensively, and on the whole so satisfactorily and profitably, as it is in the United States."

Slate.—The prices of Pennsylvania black slate remains the same this year as last. The Vermont Slate Trust has not as yet fixed its prices for its product. Ruling prices per square in New York are about as follows: Black roofing slate $4.25 @$5.50; red roofing $12, with occasional quotations of $15; unfading green $7@$7.50. All prices are firmly maintained.

IMPORTS AND EXPORTS OF METALS AT NEW YORK JANUARY 6 TO JANUARY 18 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Meyer, G. A. & E.		9
Muller, Schall & Co.		69
Total		78
Corres. date, 1889		50
Pig Lead.	Lbs.	Lbs.
Schultz & Co., A.		98
Total		98
Corres. date, 1889		
Tin Plates.	Boxes.	Boxes.
Bruce & Cook	1,932	5,878
Byrne & Son	1,000	1,000
Central Stamp, Co.	1,582	12,149
Coddington & Co.		5,710
Cohn & Co		236
Con. Fruit Jar Co.		120
Corbiere F. & Co.		380
Cort & Co.	3,758	12,898
Crooks & Co.	1,400	2,996
Dickerson, V. D. & Co.	8,193	22,791
Iron Clad Mfg. Co.		160
Lalance & G. M. Co.	250	1,138
Merchant & Co.	50	3,062
Mersick & Co.		629
Morewood & Co.	2,000	6,892
Pratt Mfg. Co.		3,134
Phelps, Dodge & Co	5,160	18,676
Shepard & Co.		789
Thomson & Co., A. A	765	4,471
Wheeler & Co.		1,209
Whittemore & Co.	219	219
Wolff & Reesing		625
Total	26,308	103,952
Corres. date, 1889		75,910
Pig Iron.	Tons.	Tons.
Crocker Bros.		200
Total		200
Corres. date, 1889	150	850
Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Dana & Co		254
Pope, Jas. E., Jr.		61
Roebling's Sons, J. A.		55
Wolff, & Co., R. H.		60
Total		430
Corres. date, 1889	5	153
Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.		3
Bacon & Co		45
Crocker Bros.		77
Downing & Co.	100	100
Lilienberg, N.		100
Milne & Co		34
Page, Newell & Co.	49	192
Wilson, J. G.		2
Total	149	553
Corres. date, 1889	481	496
Scrap Iron.	Tons.	Tons.
Samper & Co., S.		186
Total		186
Corres. date, 1889	20	354
Steel and Iron Rods.	Tons.	Tons.
Abbott & Co.		255
American S. Co.		50
Downing & Co.		25
Galvin, S. A.		174
Greely & Co., C. S.		30
Lundberg, G.		110
Milne & Co		50
Roebling's Sons, J. A.		180
Wood & Niebuhr		25
Wolf & Co., R. H.		664
Total		1,563
Corres. date, 1889	1,032	1,301
Old Rails.	Tons.	Tons.
Frankfort, M.		408
Total		408
Corres. date, 1889		510
Spiegeleisen.	Tons.	Tons.
Blakely & McLellan	50	1,460
Crocker Bros.	98	1,049
Dana & Co.		1,146
Foley, F.		50
Hernshive, L.		1,000
Naylor & Co.		1,223
Perkins, C. L.		40
Total	148	6,268
Corres. date, 1889	741	909
Iron Ore.	Tons.	Tons.
Balz, Jacob		67
Earnshaw, A.		742
Total		809
Corres. date, 1889		226

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere.		8,750
Amer. Met. Co., Lt.		82,760
Total		91,510
Corre. date, 1889		
Copper Matte.		
American Metal Co		224,051
Lewisohn Bros.		154,290
Paulsen, Wm.	848,100	978,100
Will'ms & T'hune		953,768
Total	848,100	2,610,240
Corres. date, 1889		

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date and amount of last.		
1	Adams S. L.	Colo.	$1,500,000	150,000	$10	*	....	....	....	$555 000	Jan.	1887	.15
2	Alice, S. C	Mont	10,000,000	400,000	25	*	....	....	....	825,000	Dec.	1889	.06⅔
3	Alma Cons., G	Idah.	300,000	30,000	10	....	....	....	....	45,000	Dec.	1888	.50
4	Amy & Silversmith, S.	Mon.	....	341,419	....	....	....	....	....	247,530	Aug.	1887	12½
5	Atlantic, C	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	580,000	Feb.	1890	1.50
6	Argenta, S.	Nev.	10,000,000	100,000	100	335,000	July	1889	.10	40,000	Feb.	1890	.20
7	Aspen Mg. & S., S. L.	Colo.	2,000 000	200,000	10	....	....	....	....	360,000	July	1889	.20
8	Aurora, L.	Mich	2,000,000	100,000	20	....	....	....	....	155,000	Oct.	1887	1.87½
9	Badger, S.	Oct.	250,000	50,000	5	....	....	....	....	25,000	Jan.	1890	.25
10	Bassick, G. S.	Colo.	10,000,000	100,000	100	*	....	....	....	400,000	Mar.	1884	1.00
11	Belle Isle, S.	Nev.	10,000,000	100,000	100	155 000	Apl.	1889	.10	300,00.	Dec	[illegible]	95
12	Belcher, G. S.	Nev.	10,400,000	104,000	100	2,822.000	Feb	1889	.50	15,397,200	Apl.	1876	1.00
13	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	120,000	Dec.	1889	25	187,500	Jan.	1887	10
14	Bodie Con., G. S.	Cal.	10,000 000	100 000	100	575,000	Nov	1889	25	1,295,000	Apl.	1885	50
15	Boston & Mont., G.	Mon	2,500,000	250,000	10	*	....	....	....	580,000	Jan.	1890	1.00
16	Boston & Mont., C. S.	Mon	2,500,000	100,000	25	*	....	....	....	1,400,000	Jan.	1890	1.00
17	Breece, S.	Colo	5,000,000	200,000	25	*	....	....	....	2,000	Feb.	1880	.01
18	Brooklyn Lead, L. S.	Utah	500,000	50,000	10	....	....	....	....	127,000	July	1887	.05
19	Buiwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175 000	Jan.	1884	.10
20	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*	....	....	....	150.000	Oct.	1883	.06⅔
21	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	136,000	Oct.	1889	.08
22	Calliope, S.	Colo.	1,000,000	1	1	*	....	....	....	60,000	Jan.	1890	.01
23	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000	....	....	....	33,350,000	Feb.	1890	5.00
24	Carbonate Hill S. L.	Colo.	1,500,000	200,000	10	*	....	....	....	80,000	Apl.	1884	.05
25	Carlisle, G.	N. M.	1,000,000	200,000	5	....	....	....	....	175,000	Dec.	1888	.12½
26	Castle Creek, G.	Idah.	100,000	100,000	1	....	....	....	....	51,000	Oct.	1883	.03
27	Catalpa, S. L.	Colo.	3,000,000	300,000	10	*	....	....	....	270,000	May	1884	.10
28	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,950.000	Feb.	1890	1.00
29	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*	....	....	....	1,650,000	Dec.	1884	.25
30	Colorado Central, S. L.	Colo.	2,750,000	275,000	10	*	....	....	....	406,000	July	1889	.05
31	Confidence, S. L.	Nev.	....	24,960	....	....	....	....	....	199,680	Apl.	1889	1.00
32	Cons. Cal. & Va., G. S.	Nev.	21 600 000	216.000	100	108,000	Jan.	1885	.20	3,358,800	Jan.	1890	.50
33	Contention, S.	Ariz.	12,500,000	250,000	50	....	....	....	....	†2,587,000	Dec.	1884	.25
34	‖Cop. Queen Cons., C.	Ariz.	1,400 000	140,000	10	....	....	....	....	140,000	Oct.	1888	.50
35	Crescent, S. L. G.	Utah	15,000,000	600,000	25	....	....	....	....	228,000	Oct.	1888	.03
36	Crown Point, G. S.	Nev.	10 000 000	100,000	100	2,850,000	Sept	1880	.50	11,588 000	Jan.	1875	2.00
37	Daly, S. L.	Utah	3,000,000	150,000	20	*	....	....	....	1,350,000	Jan.	1890	.25
38	Deer Creek, S. G.	Idah.	1 000,000	200,000	5	....	....	....	....	20,000	Jun.	1889	.05
39	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*	....	....	....	‖1,000,000	Nov.	1887	.10
40	Derbec B. Grav., G. S.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	210.000	Oct.	1889	.10
41	Dunkin, S. L.	Colo.	5,000,000	200 000	25	*	....	....	....	390,000	Sept	1889	.05
42	Dunstone, G. S. L.	Mont	1,900,000	200,000	5	*	....	....	....	6,000	Nov.	1888	.03
43	Eclipse	Colo.	100,000	100,000	1	....	....	....	....	20,000	Nov.	1887	.10
44	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
45	Empire Lt., G.	Mont	500,000	100,000	5	*	....	....	....	70,500	Oct.	1887	.37½
46	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	550,000	Jun.	1889	.50	4,955.000	July	1888	.25
47	Evening Star, S. L.	Colo.	500,000	50,000	10	*	....	....	....	1,437,500	Dec.	1889	.25
48	Excelsior, G.	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875.000	Oct.	1880	.25
49	Father de Smet, G.	Dak.	10,000,000	100 000	100	200,000	Nov	1878	1.00	1.125.000	Dec.	1885	.20
50	Franklin, C.	Mich	1,000,000	40,000	25	230,000	Jun.	1871	....	1,630.000	Dec.	1889	2.00
51	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	....	....	....	....	190,000	July	1886	.10
52	Garfield Lt., G. S.	Nov.	500,000	100,000	5	....	....	....	....	85,000	Apl.	1888	.12½
53	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	4,434,600	Oct.	1889	.30	3,826,800	Oct.	1870	10.00
54	Grand Prize, S.	Nev.	10,000,000	100,000	100	715,000	Nov.	1889	.30	495,000	Mar	1884	.25
55	Granite, S. L.	Colo.	500,000	500,000	1	....	....	....	....	30.000	Oct.	1889	.02
56	Granite Mountain, S.	Mont	10,000,000	400,000	25	....	....	....	....	7,600.000	Nov.	1889	.50
57	Green Mountain, G.	Mont	1,250,000	125,000	10	*	....	....	....	212.000	Nov.	1884	.07½
58	Hale & Norcross, G. S.	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,102,000	July	1888	.50
59	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	150	*	....	....	....	1,437,500	Dec.	1889	.50
60	Hel'a Mg & Red, G. S. L.	Mont	3,315,000	663,000	5	....	....	....	....	197,975	July	1886	.06
61	Holmes, S.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	.10	75,000	Apl.	1886	.25
62	Holyoke, G.	Idah.	200,000	200,000	1	....	....	....	....	27.000	Feb.	1883	.10
63	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,493,750	Jan.	1890	.10
64	Honorine, S. L.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125.000	Sept	1887	.05
65	Hope, S.	Mont	1,000,000	100,000	10	*	....	....	....	233,252	Apl.	1888	.25
66	Horn-Silver, S. L.	Utah	10.000.000	400,000	25	*	....	....	....	4,050,000	Dec.	1889	.12½
67	Hubert, G.	Colo.	1,000,000	1 mil'n	1	....	....	....	....	247,000	Dec.	1889	.00½
68	Idaho, G.	Cal.	310,000	3,100	100	....	....	....	....	5,250,500	Dec.	1889	5.00
69	Ideal, S. L.	Colo.	1,500,000	50,000	10	....	....	....	....	15.000	Oct.	1886	.05
70	Illinois, S.	N. M.	100,000	100,000	1	....	....	....	....	45,000	Apl.	1889	.20
71	Independence, S.	Colo.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
72	Iron Hill, S.	Dak.	5,000,000	250,000	20	134,000	July	1889	.03	156,250	Nov	1887	.07½
73	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*	....	....	....	2,500,000	Apl.	1889	.20
74	Jackson, G. S.	Nev.	5,000,000	50,000	100	287,500	Nov	1880	.20	55,000	Jun.	1889	.10
75	Jay Gould	Mont	2,000,000	40,000	5	*	....	....	....	365,000	Apl.	1889	.04
76	Jocuistita, G.	Mex.	2,500,000	250,000	10	....	....	....	....	1,200,000	Feb.	1886	.50
77	Jumbo, G.	Colo.	2,000,000	200,000	10	....	....	....	....	35.000	Oct.	1887	.02½
78	Kearsarge, S. L.	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00	100,000	Jan.	1890	2.00
79	Kentuck,	Nev.	3,000,000	30,000	100	360,000	Dec.	1889	.30	1,350,000	Dec.	1886	.10
80	La Plata, S. L.	Colo.	2,000,000	200,000	10	*	....	....	....	610,000	Sept	1882	.30
81	Leadville Cons., S. L.	Colo.	4,000,000	400,000	10	*	....	....	....	423,000	Apl.	1887	.05
82	Lexington, G. S.	Mont	4,000,000	40,000	100	*	....	....	....	565,000	Jan.	1885	2.00
83	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*	....	....	....	810,000	Jan.	1890	.05
84	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	....	....	....	‖1,050,000	Mch.	1890	.50
85	Martin White, S.	Nev.	10,000,000	100,000	100	1,175,000	Jan.	1889	.25	140,000	Dec.	1886	.25
86	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*	....	....	....	175,000	May	1882	5.00
87	Matchless, S.	Colo.	500,000	500,000	1	*	....	....	....	12,500	Dec.	1889	.01½
88	Minnesota, C	Mich	1,000,000	40,000	25	420.000	Apl.	1886	1 00	1,825,000	Mar.	1876	....
89	Mono, G.	Cal.	5,000,000	50,000	100	102,850	Nov.	1889	.25	12.500	Mar.	1886	.25
90	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	....	....	....	....	2,415,951	Jan	1890	.09
91	Morning Star, S. L.	Colo.	1,000,000	100,000	10	*	....	....	....	795,000	Dec.	1889	.20
92	Moulton, S. G.	Mont	2,000,000	400,000	5	*	....	....	....	380,000	Dec.	1887	.07½
93	Mount Pleasant, G.	Cal.	150,000	1,500	100	*	....	....	....	150,000	Feb.	1887	.20
94	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	150,000	Oct	1889	.20
95	Napa, Q	Cal.	700,000	100,000	7	....	....	....	....	350,000	Jan	1890	.20
96	Navajo, G. S.	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
97	New Guston, S.	Colo.	500,000	100,000	5	....	....	....	....	287,500	Dec	1889	.87½
98	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	....	....	....	....	30,000	Dec.	1885	.06⅔
99	Northern Belle, S.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.30	2,400,000	Apl.	1883	.50
100	North Belle Isle, S.	Nev.	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1889	.50
101	North Star, G.	Cal.	1,000,000	100,000	10	....	....	....	....	250,000	Dec.	1889	.50
102	Ontario, S. L.	Utah	15,000,000	150,000	100	....	....	....	....	10,700.500	Jan.	1890	.60
103	Opnir, G. S.	Nev.	10,000,000	100,000	100	4,159,440	May	1889	.60	1,005,800	July	1882	1.00
104	Original, S. C.	Mont	1,500,000	60,000	25	*	....	....	....	123,000	July	1888	.05
105	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,222,500	Mar.	1889	1 00
106	Oxford, G.	N. S.	125,000	125,000	1	*	....	....	....	73,500	Sept	1888	.02
107	Paragon Cons., Q.	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
108	Parrot, C.	Mont	1,800,000	180,000	10	....	....	....	....	430,000	Oct.	1889	.05
109	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*	....	....	....	60,000	Nov.	1885	....
110	Plumas Eureka, G.	Cal.	1,406,250	140,625	10	*	....	....	....	2,548,046	Oct.	1889	.37½
111	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*	....	....	....	20,000	Feb.	1886	.10
112	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*	....	....	....	2.280.000	Feb.	1883	.40
113	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100	....	....	....	....	1,792,962	Feb.	1890	1.50
114	" " com., Q.	Cal.	5,700,000	57,000	100	....	....	....	....	643,867	July	1882	.40
115	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1862	....	5,370,000	Jan.	1890	3.00
116	Richmond, S. L.	Nev.	1,350,000	54,000	25	*	....	....	....	4,312,587	Jun.	1887	1.25
117	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
118	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*	....	....	....	585,000	Mar.	1886	.05
119	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20	*	....	....	....	100,000	Dec.	1882	.50
120	Savage, S.	Nev.	11,200,000	112,000	100	6,642,000	July	1889	.50	4,460.000	July	1889	3.00
121	Shoonone, G.	Idah.	150,000	150,000	1	....	....	....	....	7,500	Apl.	1883	.01
122	Sierra Buttes, G.	Cal.	2,225 000	172,500	10	*	....	....	....	1,568,145	Apl.	1888	.12½
123	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,250,000	Oct.	1889	.50	102,000	Jan.	1871	1.00
124	Sierra Nevada, S. L.	Idaho	1,000,000	1	1	*	....	....	....	40,000	May	1889	.02
125	Silver Cord, G. S. L.	Colo.	4,500,000	450,000	10	....	....	....	....	270,000	Apl.	1889	.10
126	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
127	Silver Mg. of L.	N. M.	500,000	500,000	1	....	....	....	....	50,000	June	1889	.05
128	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*	....	....	....	50,000	Nov.	1886	.02
129	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*	....	....	....	3,127,500	Jun.	1889	.10
130	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	.25
131	Standard, G. S.	Cal.	10.000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
132	Stormont, S.	Utah	500,000	500,000	1	*	....	....	....	155,000	Nov.	1881	.05
133	St. Joseph, L.	Mo.	1,500,000	150,000	10	*	....	....	....	844.000	Dec.	1887	.20
134	Swansea, G.	Colo.	600,000	60,000	10	*	....	....	....	9,000	Apl.	1886	.02½
135	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,200,000	Jan.	1890	3.00
136	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
137	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*	....	....	....	1,250,000	Apl.	1882	.10
138	United Verde, C.	Ariz.	3,000,000	300,000	10	*	....	....	....	97,500	Feb.	1884	.20
139	Valencia, M.	N. H.	150,000	1,500	100	....	....	....	....	37,500	Apl.	1886	2.50½
140	Viola Lt., S. L.	Idah.	750,000	150,000	5	*	....	....	....	272,500	Oct.	1888	.37½
141	Ward Cons., S. L.	Colo.	2,000,000	200,000	10	....	....	....	....	20,000	Dec.	1889	.05
142	Yankee Girl	Colo.	2,500,000	250,000	10	*	....	....	....	1,275,000	July	1887	.10
143	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,504,000	Mar	1889	.50	2,184,000	Aug	1871	1.50
144	Webb City, L. Z.	Mo.	55,000	11,000	5	....	....	....	....	3,300	Jun.	1889	.10
145		....	....	....	....	....	....	....	....	....	....	....	....

NON-DIVIDEND PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value.	Assessments. Total levied.	Assessments. Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*	....	....	....
2	Alleghany, S.	Colo	5,000,000	50,000	10	....	....	....	....
3	Allouez, C.	Mich	2,000,000	80,000	25	$737,000	Jan.	1880	.50
4	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	588,750	July	1889	87½
5	Alta, S.	Nev.	10,080,000	100,800	100	2,248,800	Sept	1888	.50
6	Amador, G.	Cal.	400,000	200,000	2	*	....	....	....
7	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.10
8	Amity, S.	Colo.	250,000	250,000	1	....	....	....	....
9	Anglo-Montana, Lt.	Mon.	600,000	120,000	5	....	....	....	....
10	Astoria, G.	Cal.	200,000	100,000	2	....	....	....	....
11	Barcelona, G.	Nev.	5,000,000	200,000	25	*	....	....	....
12	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.10
13	Belmont, S.	Nev.	5,000,000	50,000	100	735.000	Apl.	1886	.10
14	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	2,180,590	Jan.	1890	.20
15	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	....	....	....
16	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*	....	....	....
17	Black Oak, G.	Cal.	3,000,000	300,000	10	*	....	....	....
18	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
19	Bremen, S.	N. M.	5,000,000	500,000	10	*	....	....	....
20	Brownlow, S.	Colo.	250,000	250,000	1	....	....	....	....
21	Brunswick, G.	Cal.	2,000 000	400,000	5	*	....	....	....
22	Bullion, G. S.	Nev.	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
23	Calaveras, G.	Cal.	500,000	500,000	1	*	....	....	....
24	Carisa, G.	Wy	500,000	100,000	5	*	....	....	....
25	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*	....	....	....
26	Cashier, G. S.	Colo.	500,000	250,000	2	*	....	....	....
27	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*	....	....	....
28	Cherokee, G.	Cal.	1,500,000	150,000	10	....	....	....	....
29	Chollar, G. S.	Nev.	11,200,000	112,000	100	1,484,000	July	1890	.50
30	Cleveland,	Dak.	1,000,000	500,000	2	....	....	....	....
31	Coichis	N. M.	500,000	50,000	10	....	....	....	....
32	Commonwealth, S.	Nev.	10,000,000	100,000	100	170,000	Nov.	1888	.50
33	Comstock, G. S.	Nev.	10,000,000	100,000	100	30 000	Mar.	1887	.15
34	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,802,500	Nov.	1889	.05
35	Con. Pacific, G.	Cal.	6,000,000	60,000	100	192,000	Oct.	1889	.10
36	Consolidated, S.	Mo.	3,500,000	350,000	10	....	....	....	....
37	Crescent, S. L.	Colo.	3,000,000	300,000	10	....	....	....	....
38	Crocker, S.	Ariz.	10,000,000	100,000	100	125,000	Jun.	1889	.10
39	Crowell, G.	N. C.	500,000	500,000	1	*	....	....	....
40	Dahlonega, G.	Ga.	250,000	250,000	1	*	....	....	....
41	Dandy, S.	Colo.	5,000,000	500,000	10	*	....	....	....
42	Decatur, S.	Colo.	1,500,000	300,000	5	*	....	....	....
43	Denver City, S. L.	Colo.	5,000,000	500,000	10	*	....	....	....
44	Denver Gold, G.	Colo.	300,000	60,000	5	*	....	....	....
45	Durango, G.	Colo.	500,000	500,000	1	*	....	....	....
46	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
47	El Cristo, G. S.	U.S.C	1,000,000	500,000	2	*	....	....	....
48	El Dorado, G.	Cal.	1,000,000	250,000	4	*	....	....	....
49	El Talento, G.	U.S.C	1,000,000	500,000	2	....	....	....	....
50	Empire, S.	Utah	10,000,000	100,000	100	....	....	....	....
51	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	....	....	....	....
52	Exchequer	Nev.	10,000,000	100,000	100	515,000	Apl.	1889	.25
53	Found Treasure, G. S.	Nev.	10,000,000	100,000	100	30,530	Apl.	1889	12½
54	Gogebic L. Syn., I.	Wis.	5,800,000	200,000	25	....	....	....	....
55	Gold Cup, S.	Colo.	500,000	500,000	1	*	....	....	....
56	Golden Era, S.	Mon.	2 000,000	200,000	10	*	....	....	....
57	Golden Fleece, G.	Colo.	5,000,000	200,000	25	239,314	Dec.	1885	.25
58	Gold Rock, G.	Cal.	1,000,000	500,000	2	*	....	....	....
59	Goodshaw, G.	Cal.	10,000,000	100,000	100	*	....	....	....
60	Grand Belt, C.	Tex.	12,000,000	120,000	100	....	....	....	....
61	Grand Duke	Colo.	800,000	80,000	10	....	....	....	....
62	Great Remance, G.	U.S.C	1,000,000	500,000	2	*	....	....	....
63	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*	....	....	....
64	Gregory Con., G.	Mon.	3,000,000	300,000	10	....	....	....	....
65	Harlem M. & M. Co., G.	Cal.	1 000,000	200,000	5	....	....	....	....
66	Head Cent. & Tr. S. G.	Ariz.	10,000,000	100,000	100	....	....	....	....
67	Hector, G.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.10
68	Highland, C.	Mich	500,000	25,000	20	....	....	....	....
69	Hollywood	Cal.	200,000	100,000	2	*	....	....	....
70	Hortense, S.	Colo.	2,000,000	200,000	10	....	....	....	....
71	Hurd, S.	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
72	Iron Gold & Silver, M.	N. M.	2,000,000	200,000	10	*	....	....	....
73	Ironton, I.	Wis.	1,000,000	40,000	25	....	....	....	....
74	Iroquois, C.	Mich	1,250,000	50,000	25	....	....	....	....
75	J. D. Reymert	Aris.	10,000,000	400,000	100	....	....	....	....
76	Julia Cons., G. S.	Nev.	11,000,000	110,000	100	1,660,000	Jan.	1889	....
77	Lacrosse, G.	Colo.	1,000,000	100,000	10	*	....	....	.10
78	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*	....	....	....
79	Mayflower Gravel	Cal.	1,000,000	100,000	10	535,000	Jan.	1890	0
80	May Mazeppa, S.	Colo.	500,000	500,000	1	*	....	....	....
81	Medora, G.	Dak.	250,000	250,000	1	....	....	....	....
82	Mexican, G. S.	Nev.	10,000,000	100,000	100	2,800,760	Dec.	1889	.25
83	Middle Bar G.	Cal.	400,000	200,000	2	*	....	....	....
84	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*	....	....	....
85	Mollie Gibson	Colo.	2,000,000	100,000	2	*	....	....	....
86	Monitor, S.	Colo.	100,000	1,000,000	1	*	....	....	....
87	Mutual Mg. & Sm.	W'sh	1 0 0,000	1,100,000	1	*	....	....	....
88	Native, C.	Mich	1,000,000	40,000	25	....	....	....	....
89	Neath, G.	Colo.	1,000,000	100,000	10	....	....	....	....
90	Nevada Queen, S.	Nev	10,000,000	100,000	100	250,000	Oct.	1889	.25
91	New Germany, G.	N. S.	100,000	100,000	1	*	....	....	....
92	New Basin, S. L.	Colo.	2,000,000	200,000	10	*	....	....	....
93	N. Commonwl'th, S. L.	Nev.	10,000,000	100,000	100	60,000	Apl.	1889	3
94	North Standard, G.	Cal.	10,000,000	100,000	100	20,000	Nov	....	....
95	Noonday	Cal.	600,000	60,000	10	208,000	Dec	1881	.10
96	Oneida Chief, G.	Cal.	500,000	125,000	100

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 18.		Jan. 20.		Jan. 21.		Jan 22.		Jan. 23.		Jan. 24.		SALES.
	H.	L	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mont.	.....	.....	1.20	....	.....	.....	1.50	.....	.....	.....	.....	..	400
Aspen, Colo	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic, Mich	...	..	..	..	.....	.....	.....	.....	.....	.....	.....	.....	.....
Basic, Colo	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belcher	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belle Isle, Nev.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	750
Bodie Cons., Cal.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bes. & Mont., Mont	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Breece, Colo	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bulwer, Cal	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caledonia, Dak	1 50	.....	1.40	....	1 60	.....	.....	.....	.....	.....	.....	.....	520
Calumet & Hecla	...	..	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Central	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Cal. & Va., Nev.	4 50	...	4.75	4 70	4 70	....	4 80	4.70	4.80	...	4 75	...	570
Crown Point, Nev	1.75	.....	..	..	1 65	....	1.65	.....	1.55	....	1 65	...	200
Deadwood, Dak	.....	.....	.....	....	.....	....	1 50	.....	1 45	.....	1.55	1.50	320
Eureka Con., Nev.	.....	.....	.....	....	.....	....	.....	.....	.....	.....	3.00	...	25
Father de Smet, Dak	.....	.....	.....	....	.....	....	.....	.....	.....	.....	.....	.....	.....
Franklin, Mich	.....	.....	.....	....	.....	....	.....	.....	.....	.....	.....	.....	.....
Freeland, Colo	.75	.72	.76	.72	.75	4.72	.71	.70	.....	.....	.65	.64	16,5
Gould & Curry, Nev.	..	..	..	....	1.45	.....	.....	.....	1.49	....	1 50	..	400
Hale & Norcross, Nev	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holyoke, Id.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Homestake, Dak	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	200
Horn-Silver, Ut.	...	..	2 50	2.45	2.50	2.45	2.50	2.45	2.50	2.40	2 4	....	1,225
Iron Hill, Dak	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.50	....	100
Iron Silver, Colo	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leadville C., Colo	...	.....	.....	....	.11	.....	.....	.....	.....	.....	.11	....	500
Little Chief, Colo	.....	.....	.....	....	.25	.23	.....	.....	.....	.....	..	....	600
Little Pittsburg, Colo	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mono, Cal.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mt. Diablo, Nev.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Navajo, Nev	.37	....	.40	..	.....	.....	.....	.....	.35	....	.35	....	800
North Belle Isle, Nev.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Star, Cal.	...	..	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ontario, Ut.	40.00	29.00	40.25	40 00	....	....	.....	.....	40 00	....	40.25	....	230
Ophir, Nev.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Osceola, Mich	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plutus, Colo	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth, Cal	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicksilver, Pref	37.00	.....	.....	....	.....	.....	.....	.....	.....	.....	37.75	....	200
Com.	.....	.....	.....	....	.....	.....	.....	.....	7.00	....	.....	....	100
Robinson Cons. Colo.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Savage, Nev	..	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra Nevada, Nev.	...	.....	.....	....	2.00	....	.....	.....	1.55	....	.....	....	200
Silver Cord	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver King	.....	.....	.....	....	.39	....	.33	....	.....	....	.30	....	700
Silver Mg. of L. V.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard, Cal	.....	.....	.....	....	.....	.....	.50	..	.....	.....	.....	.....	20
Stormont, Utah	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tamarack, Mich.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ward Con.	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yellow Jacket	.....	.....	.....	....	.....	.....	2 2	.....	2.15	.....	.....	.....	200

NON-DIVIDEND-PAYING MINES

NAME AND LOCATION OF COMPANY.	Jan. 14.		Jan. 20.		Jan 21.		Jan 22.		Jan. 23.		Jan 24.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L	H.	L.	
Alpha	....	..	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Alta, Nev.	....	..	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Andes, Nev.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Amador, Cal	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
American Flag, Colo	.....	.....	.....	.....	...	.....	.04	....	.....	.....	.....	.....	750
Astoria, Cal	.07	.....	.06	...	.04	....	.05	....	.08	.05	.08	.07	43,800
Barcelona, Nev.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Bechtel, Cal	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Best & Belcher, Nev.	2.40	...	.....	....	2.4	...	.....	...	2.05	...	.....	....	200
Brunswick, Cal.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Bullion, Nev.	55	.....	.70	....	.65	....	.60	....	.....	.....	.60	....	700
Cashier, Colo	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Castle Creek, Id.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Cholla, Nev	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Col. & Beaver, Id.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Commonw'th, Nev.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Comst.ock T., Nev.	.19	.18	.18	....	.19	...	.20	....	.16	...	.....	....	1,6?4
" bonds.	.....	.....	.....	.....	35 0	...	.....	.....	31 00	..	.....	....	8,600
" scrip	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.38	....	300
Con. Pacific, Cal.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
El Cristo, Rep of Col.	1.65	1.50	1 70	1.55	1.85	1.70	1.85	1.70	1.80	1 75	1.85	1 65	11,160
Excelsior, Cal	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Exchequer Nev.	.60	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	200
Gold Stripe, Cal.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Julia, Nev.	.....	.....	.....	.....	...	.....	.30	.....	.....	.....	.40	....	500
Kingst'n & Pemb'ke	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Kossuth, Nev	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.10	....	400
Lacrosse, Colo	.....	.....	.....	.....	.07	....	.07	....	.....	.....	.....	.....	3,500
Lee Basin, Colo	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Mexican, Nev.	2.40	.....	.....	.....	2.35	....	2.35	....	.....	.....	.....	.....	400
Middle Bar, Cal.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Monitor, Colo.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Mutual Sm. & M. Co	1.60	...	1 60	....	1.65	....	1.70	....	1.70	....	1.95	....	1,500
Nevada Queen, Nev.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
N. Com'nw'th, Nev.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Occidental, Nev.	.....	.....	.....	.....	.75	....	.....	.....	.....	.....	.....	.....	400
Oriental & Mil., Nev	.95	....	.06	....	...	.....	.07	....	.06	....	.....	....	7,500
Overman, Nev.	.80	.....	.....	.....	...	.....	.....	.....	.80	....	.....	....	2 0
Phœnix of Ariz.	.....	.....	.....	.....	.52	.50	.60	.50	.60	.58	.61	.59	12,200
Potosi, Nev.	1.85	.....	.....	.....	...	.....	.05	0 3	.06	.05	.05	...	100
Rappahann'k, Va	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.40	....	8, 00
S. Sebastian, San S	.....	.....	.....	.....	...	.....	.30	..	.....	.....	.....	.....	.....
Scorpion, Nev	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	500
Shoshone Idaho	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Silver Hill, Nev	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Silver Queen	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Stanislaus, Cal	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Sutro Tunnel, Nev.	.....	.....	.....	.....	.06	....	.....	.....	.....	.....	.....	.....	.....
" Trust Cert.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	000
Sutter Creek, Cal.	.65	.64	.71	.65	.90	.72	1 05	.99	1.25	1.05	1.75	1.25	18,900
Union Cons., Nev.	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
United Copper	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....
Utah, Nev.	.70	.....	.75	....	.80	....	.....	.....	.80	.....	.75	..	1,800

Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted securities ‡Assessment unpaid. Dividend shares sold, 26,660. Non-dividend shares sold, 112,764. Total, New York, 191,424.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan. 17.		Jan. 18.		Jan. 20.		Jan. 21.		Jan. 22.		Jan. 23.		SALES.
Atlantic, Mich.	15.63	.....	.....	.....	15 88	.....	.....	.....	.....	.....	14 38	....	112
Bodie, Cal.	.....	.....	.....	.....	.....	.....	.....	.....	.90	.....	90	.....	400
Bonanza Developm't	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bost. & Mont., Mont.	50.75	50.25	51.00	50 88	51 13	50.75	51.00	50.75	51 13	51.00	51.25	49 88	2,962
Breece, Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Calumet & Hecla, Mich.	267	.....	.....	....	266	265	264	.....	265	264	264	....	60
Catalpa, Colo.	.....	.....	.20	....	.....	.....	.....	.....	.....	.....	.....	.....	400
Central, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chrysolite, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Cal. & Va., Nev.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dunkin, Colo.	.70	.....	.....	.....	.....	.....	.75	.....	.73	.70	.....	....	2,850
Enterprise.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Franklin, Mich.	16.75	.....	17.00	.....	17.25	....	17.00	17.00	17.00	.	17.25	16.00	853
Hale & Norcross, Nev.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Honorine, Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Chief	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Pittsburg, Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Martin White, Nev.	....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moulton.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Napa, Cal.	.....	.....	4 25	....	4 25	..	.....	.....	.....	.....	.....	.....	150
Ontario, Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Osceola, Mich.	27.60	28.25	27.38	26 75	27.50	27.13	27.75	27.50	27. 5	.....	28 00	27.88	2,900
Pewabic, Mich.	8 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	8 50	.....	60
Quincy, Mich.	72.. 0	72 00	72 00	.....	72 50	72.00	72.00	.....	.....	.....	75.00	.....	229
Ridge, Mich.	.....	.....	.....	.....	.....	.....	1.00	.75	1.13	...	1.20	....	875
Sierra Nev., Nev.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver King, Ariz.	...	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tamarack, Mich.	159	158	.....	.....	159	..	160	....	1 9½	157	158	.. ..	2 5

NAME OF COMPANY.	Jan. 17.		Jan. 18.		Jan. 20.		Jan. 21.		Jan. 22.		Jan. 23.		SALES.
Alloues, Mich.	1.50	.....	1 25	.....	1.50	1.25	1.98	1.25	2.00	1.75	1.90	1.88	5,120
Arnold, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Astec, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bowman	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Butte & Bost., Mont.	15.00	14.88	15.00	.....	15.00	.....	14 88	14 50	14.50	14.25	14.75	14 50	665
Canada	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Casnier, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crescent, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Don Enrique, N. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Everett, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hanover, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Humboldt, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hungarian	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Huron, Mich.	.....	.....	.....	.....	.....	.....	4 13	.....	4.00	.....	4.25	.....	600
Kearsarge	8.75	8.38	8.63	.....	10.00	9.00	10.00	9.75	9.88	9.75	9.75	.....	5,255
Mesnard, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
National, Mich.	.....	.....	.....	.....	2.50	.....	.....	.....	.....	.....	2 63	.....	100
Orien & Miller, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phœnix, Ariz	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pontiac, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rappahannock, Va	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rockland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santa Fe, N. Mex.	1.40	1.35	1.35	.....	1.35	1 30	1 38	1.25	1.60	1.35	1.55	1.48	9,380
Security, Colo.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shoshone, Idaho	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Side, Mich.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Star	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Boston: Dividend shares sold, 12,623. Non-dividend shares sold, 21,100. Total Boston, 33,723.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Jan. 18.		Jan. 20.		Jan. 21.		Jan. 22		Jan. 23.		Jan. 24.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cameron Coal & Iron Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3½	.....	300
Ches. & O. RR.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic. & Ind. Coal RR.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. & Hocking Coal	100	.....	.....	15	.....	16	.....	15½	.....	18¾	16¾	18½	18	2,655
Col., C. & I	100	44¾	44¼	44¾	44¼	44⅞	44¼	47	44¾	48⅛	46½	49⅞	47⅛	29,556
Colorado Fuel Co.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C.	100	.....	.....	.....	.....	150½	150	151	150½	.....	.....	151⅜	150½	1,581
D., L. & W. RR.	50	136	135⅝	136	135⅝	136½	136½	137	136¼	137⅝	136½	137⅝	136½	105,563
Hocking Valley	100	20½	20	20¼	20	21½	21	23	21¼	23¼	22⅝	23⅜	22⅞	18,101
Hunt. & Broad Top	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois Coal & Coke Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28¼	28¼	400
Lehigh C. & N.	50	52½	.....	52	51⅞	52⅛	52	.....	.....	52½	52	.....	.....	526
Lehigh Valley RR.	50	52⅞	.....	53	52⅝	53	52⅜	52⅞	.....	52⅞	.....	.....	.....	1,880
Marshall Con. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	58	57	200
Mahoning Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland Coal	100	.....	.....	.....	.....	.....	.....	13	.....	.....	.....	.....	.....	100
Morris & Essex	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	150	.....	32
New Central Coal	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. C. RR.	100	.....	.....	121	120	122¼	121¼	122⅝	121¾	123⅝	122	122⅛	122¼	2,258
N. Y. & S. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y., Susq. & Western	100	.....	.....	.....	.....	.....	.....	7⅛	.....	.....	.....	.....	.....	155
Do. pref.	100	.....	.....	.....	.....	.....	.....	.....	.....	31	.....	31⅜	.....	500
N. Y. & Perry C. & I.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Norfolk & Western R.R.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21¼	.....	280
Do. pref.	50	22¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	61½	..	100
Penn. Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. RR.	50	53¼	53⅜	53¼	53⅜	53¼	53⅜	53⅝	53¾	53¾	53⅝	.....	.....	3'509
*Ph. & R. RR.	.....	36⅞	36¾	36⅝	36	37⅝	36¼	38⅛	37¼	38⅝	38	39¼	38⅛	285,737
Sunday Creek Coal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee C. & I. Co.	.....	86¼	85¾	86	84½	86	85	86	85⅛	86	85⅛	85⅛	85¾	7,000
Do. pref.	.....	.....	.....	106	102	.....	..	108	104	109	108	112⅛	110	860
Westmoreland Coal.	.....	72¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35

**Sales in New York, 220,064; in Philadelphia, 65,673. Total sales 461,328.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. Jan. 17.	Jan. 18	Jan. 20	Jan. 21.	Jan. 22.	Jan. 23.
Alpha	.....	.....	.....	.....	.....	.....
Alta	1.30	.....	.....	1.25	.....	.....
Belcher	.....	.....	.....	.....	.....	.....
Belle Isle	.....	.....	.25	.....	.....	.....
Best & Bel.	.....	.....	2.45	2.40	2.45	.....
Bodie	.....	.55	.55	.55	.50	.44
Bulwer	.....	.....	.....	.15	.20	.....
Chollar	2.40	2.40	2.40	2.30	.....	2.35
C'm'weal'h	3.75	.....	3 80	3 80	3.75	3.60
Con. C. & V	4 65	4.00	6.65	4.55	4.75	.....
Con. Pac.	.....	.....	.....	.....	.....	.....
Crown Pt.	1.65	1.70	.....	1.50	1.55	1.55
Eureka C.	.....	.....	.....	.....	.....	.....
Gould & C.	.....	1 45	1.45	1.35	.....	1 40
Grd. Prize.	.....	.....	.....	.....	.....	.....
Hale & N.	2 80	2.85	2.85	2.80	.....	2.80
M. White.	.....	.....	.....	.....	.....	.....
Mexican	2.35	2.45	2.30	2.60	2.60	2.55
Mono.	.....	.....	.40	.....	.35	.35
Mt. Diablo	.....	.....	.....	.....	.....	.....
Navajo	.....	.....	.....	.....	.30	.....
Nev. Queen	.....	.....	.....	.90	.90	.90
N. Belle I	1.00	.....	.....	1.00	.....	.....
Occidental.	.....	.....	.....	.....	.....	.....
Ophir.	2.60	3.70	3.55	3 55	3.70	3.70
Potosi.	1.75	.....	1.70	1.60	.....	.....
Savage	1.65	1.65	.....	.....	1.55	1.60
Sierra Nev	1.90	2.05	1.95	1.90	1.95	1.95
Union Con.	2.30	.....	2.25	2.30	2.35	.....
Utah	.69	.....	.75	.70	.70	.65
Yellow Jkt.	2.05	.....	2.05	.....	.....	.....

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal	1.00	1.50
Balt. & N. C.	.09@.10	.13@.15
Big Vein Coal		
Conrad Hill	.09	.12
Cons. Coal	.24	.25
Diamond Tunnel	.15@.36	.45
George's Crk. C	1.05	1.10
Lake Chrome	.15@.23	.25
North State (Balt.)		
Ore Knob	.10	.12
Silver Valley	.2 @.40	.60@.70

Prices bid and asked during the week ending, Jan. 23d, 1890.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Con. C. & C. Co.		$20
Ala. R. Mill Co.	$100	$60
*Alice Furnace.	$104½	
Anna Howell Mg. Co.	$¼	$⅝
Bir. Mg.& M g.	$80	
Broken Arrow.		
Cahaba Coal Mg Co	$55	$65
Camille Gold Mg. Co	$⅛	$1
De Bardeleben C. & I. Co.	$75	$83
Decat. L. Imp.	$10½	$10⅝
DecaturMin.L.	$21	$22¼@$23
*Eureka	$102	$103½
Florence L. & Mg. Co.	$20	$24
Hecla Coal Co	$30	
Hen. S. & M.Co	$85	
Jagger Towley C. & C.	$10	$13
Mag-Ellen	$99	
Mary Lee C. & R. Co	$ 6	
Streffield C & I. Co		$61
Sloss I. & S.	$64	
†Sloss I. & S.	$96½@$97½	$97½@$97¾
††Sloss I. & S.	$74	$76
Tuscaloose C. I. & L. Co	$21½	
Tenn.C. & I. Co.	$85	
" pref.	$105	$106
Woodstock I.Co.	$58	$59½

Prices bid and asked during week ending Jan. 21st, 1890.

* Bonds. † First mortgage. †† Second mortgage.

Denver, Colo.

COMPANY.	H.	L.	Sales.
Allegheny, Colo	.32	.29	7,800
Amity "	.24	.21	17,000
Aspen United"	.35	.22½	84,000
Big Indian "	.50	.37	52,300
Big Six "	.16	.12½	30,400
Brownlow "	.45	.40	7,800
Calliope "	.50	.47½	3,200
Claudia, J., "	.17	.13	16,700
Clay County "	.57½	.35	11,000
Hard Money "	.19	.12	30,100
Legal Tender "	.11	.08½	31,000
Matchless "	1.20	1.00	
May-Mazeppa"	1.04	.84	42,500
Mollie Gibson"	.55	.50	700
Morning Glim"	.44	.26	54,700
Pay Rock "	.11½	.10	88,500
Puzzler "	.30	.25	56,900
Silver Cord "	.90	.80	700
Whale "	.35	.34	4,600
Total			533,900

Prices during the week ending Jan. 18th, 1890.

Kansas City, Mo.

COMPANY.	Par value	Jan. 20. Bid.	Asked.
Ben Harrison		$25.00	$35.00
Burch, L. & Z., Mo.	1	.20	.30
Express Group		.75	1.00
Hillsboro Gold			
Farmers' Coal Co		50.00	75.00
Ida Hill, S., N. Mex	100		100
Kansas City L. & Z.		.60	
Kan. City M. & M. Co.		2.60	3.00
K. C, Colo.			
Kentuck, Z., Mo.	1		
La Motte, Mo.	100		100.00
Leona			125
Maverick, S., Colo.	10		1.00
Minnequa Zinc		.25	.45
Quartz Mt.		.67	
Ruby Silver		1.12	1.25
Sonora, G. & S., Mex.	10		1.00
Standard, S. S., Colo.			
Silver Monument			3.00
Templar, N. Mex.	1		1.00
The Sylph			2.50
Webb City, L. Z., Mo.	5	5.65	
Wichita, L. Z., Kan.	100		.40

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas Co.	$40.00		$40.00
Bridgewater Gas Co.	32.00	29.00	32.00
Chartiers Val. Gas	44.00		41.00
Columbia Oil Co.	2.75		2.75
Consolidated Gas Co.	38.00		38.00
Forest Oil	108.00		108.00
Hazlewood Oil Co.	50.00		50.00
La Noria Mining	.25		.13
Luster Mg. Co.	27.00		21.75
Manufacturers Gas Co.	25.00	16.00	25.00
Nat. Gas Co. of W. Va	75.00	65.00	75.00
N.Y.& Clev.Gas Coal.	37.00		37.00
Ohio Valley Gas.	32.13		32.13
Pennsylvania Gas	14.00		13.00
People's N. G. & P. Co.	18.00	14.75	15.00
Philadelphia Co.	31.63		31.25
Pine Run Gas Co.	82.50		82.50
Pittsburg Gas	80.00	66.00	80.00
Silverton Mg. Co.	1.13	1.13	1.13
South Side Gas.			
Tuna Oil Co.	70.00	69.00	70.00
Union Gas			
Washington Oil Co.	90.00	80.00	85.00
W'house Brake Co.	62.75		62.75
W'house A. B. Co.	110.00	110.00	110.00
W'house E. Light.	47.50		47.50
Wheeling Gas	20.00		18.50
Yankee Girl Mg.	3.75	3.50	3.50

* Actual selling price.

Sales during the week ending Jan. 22, 1890:

Chartiers Val. Gas.	25 shares.	$42.00
La Noria Mg. Co.	90 "	.13@.25
Luster Mg. Co.	100 "	$24.50
Philadelphia Co.	310 "	$31.38@$31.88
W.house A. B. Co.	30 "	$110.00

St. Louis. Jan. 22.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo.	$ .28¾	$ .32
American & Nettie.	1.05	1.15
Anderson		
Arizona		.04
Aztec, N. Mex.	.08	.09
Black Oak, Cal.		
Black Spar		
Bremen		.04
Buckskin	.02	.05
Carriboo, Idaho		
Central Silver	.14	.14
Cleveland, Colo.		
Cleveland, Idaho	.27	.32
Cœur d'Alene		
Dinero, Colo.		
Golden Era, Mont.		
Golden King		
Gold Run		
Granite Mountain, Mont.	47.25	47.50
Hope, Mont.		
Ingram		
Iron Clad		
Ivanhoe, Colo.	.12½	.16¼
I. X. L., Colo.		
Jumbo, Colo		
Keystone		
La Union	.04	.04½
Little Giant		
Major Budd, Mont.	.18¾	.20
Mexican Imp., Mex.		
Michael Breen	.76¼	.80
Montrose Placer, Colo.	.38¾	.42½
Mountain Key	.57½	.60
Mountain Lion	.06½	.07½
Neath, Colo.	.05	
Old Colony		
Old Jesuit		
Pat Murphy, Colo.	.03	.04
Pedro	.01	.01½
Phillips, Colo.	.03½	.08
Pine Grove, Idaho		
Queen of the West, Idaho		
Raspberry, Mont.	.5	
Rosalis	1½	.02
San Francisco, Mont.	.01½	.01
San Pedro	.01	.01½
Silver Age, Colo.	.95	.98¾
Silver Bell		
Small Hopes, Colo.	.82½	1.00
Tourtelotte, Colo.		
West Granite, Mont.	.81¼	.82½
Wire Patch	.10	
Yuma, Ariz.	.40	.43¾

Auction Sales of Stocks.

The following securities were sold at public auction in New York this week:

1,640 shares Ball Electric Light Co., of New York, $1 per share.

50 shares Colwell Lead Co., $10 each, subject to the life-estate therein of the widow of the said Lewis Colwell, and held by Leffert Lefferts, trustee, $2,150.

45,000 shares Victoria Gold Mining Co., of Colorado, $109.

Trust Stocks. Jan. 24.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

American Cotton Oil, old.	$32 @$34
*American Cotton Oil new.	28¼@ 28½
Cattle Trust	11¼@ 15
Distillers' & Cattle Feeders'.	42½@ 44
Linseed Oil	42½@ 44
National Lead	21¼@ 21⅝
Natural Gas	125 @130
Standard Oil	162 @164
Sugar Refineries	56⅝@ 56⅞

*These are the American Cotton Oil Central Trust Co.'s receipts and are known as new, and represent the old certificates which have been deposited in the Central Trust Co. in furtherance of the reorganization plan—from a trust to a corporation

Sales at the New York Stock Exchange week ending Jan. 24:

	Sales.	Price H.	Price L.
*American Cotton Oil	61,599	29½	25¾
National Lead	38,030	21⅝	20
Sugar	117,705	56⅞	51

*Trust receipts.

Foreign Quotations.

London. Jan. 11.

COMPANY.	Highest.	Lowest.
Amador, Cal.	£1 15s.	15s.
Appalachian, N. C.	1s. 6d.	1s.
Canadian Phos. Canada.	£3⅛	£1⅛
Carlisle, N. Mex	4s 3d	3s. 9d.
Colorado, Colo.	4s. 6d.	3s. 6d.
Comstock, Utah		
Condova	1s.	6d.
Cons. Esmeralda, Nev.	4s. 3d.	3s. 9d.
Denver Gold, Colo.	1s. 3d.	9d.
Dickens Custer, Idaho.	3s. 9d.	3s. 3d.
East Arevalo, Idaho	3s. 6d.	2s. 6d.
Eberhardt, Nev		
El Callao, Venezuela		
Elmore, Idaho	4s. 3d.	3s. 9d.
Empire, Mont	1s.	6d.
Garfield, Nev.	5s. 6d.	4s 6d.
Jay Hawk Mont	3s.	2s. 6d.
Josephine, Cal	6s.	4s.
Kohinoor, Colo.	2s.3d.	1s. 9d.
La Luz, Mex.	2s. 9d.	2s. 3d.
La Trinidad, Mex	3s. 6d.	2s. 6d.
La Valera, Mexico	1⅛s.	1⅛s.
Montana Lt., Mont	£1⅛	£1⅛
New California, Colo.	10s.	9s.
New Consolidated	1s.	6d.
New Eberhardt, Nev.	1s. 3d.	9d.
New Emma, S., Utah	3s.	2s.
New Flagstaff, Utah	2s. 3d.	1s. 9d.
Newfoundland, N. F	3s.	2s.
N. Gold Hill, N. C.	1s. 3d.	9d.
New Hoover Hill, N. C.	1s. 9d.	1s. 3d.
Old Lout, Colo.	£1	£⅞
Palmarejo, Mex	£1 3-16	£1 1-16
Pinos Altos, Mex	£1 3-16	£1 1-16
Pittsburg Orig., Cal		
Pittsburg Cons. Nev.	£⅜	£¼
Plumas Eureka, Cal.	1⅛s.	1s.
Quebrada, Venezuela		
Richmond Con. Nev.	2s.	1⅛s.
Ruby&Dunderberg, Nev	1s.	6d.
Sam Christan, N. C.	3s. 6d.	3s
Sierra Buttes, Cal.	£7-16	£5-16
Sonora, Mex.	1s	6d.
Stanly, N. C	6s.	5s.
United Mexican, Mex.	£7-16	5-16
U. S. Placer, Colo.	4s. 6d.	3s. 6d.
Viola Lt., Idaho	3s.	2s.

Paris.* Jan. 9.

Belmez, Spain	550.00	540.00
Callao, Venez.	79 00	79.00
Callao Bis, Venez	4.00	4.00
East Oregon, Ore.	43.00	43 00
Forest Hill Divide, Cal.		
Golden River, Cal	400.00	400.00
" " parts	65.00	65 00
Lexington, Mont.	140.00	140.00
" parts	4.25	4.25
Ouray, Colo.		
Rio Tinto, Spain	4 8.75	428 75
Tharsis, Spain	131 25	131.25

* Francs.

CURRENT PRICES

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ₱ 100 lbs.	$1.75@$2.00
Muriatic, 18°, ₱ 100 lbs	1.40@1.50
Muriatic, 20°, ₱ 100 lbs	1.12½@1.75
Muriatic, 22° ₱ 100 lbs	1.37½@2.00
Nitric, 36°, ₱ 100 lbs	4.00@4.25
Nitric, 42°, ₱ 100 lbs	6.00@6.25
Oxalic, ₱ 100 lbs	6.50@10.50
Sulphuric, 60°, ₱ 100 lbs	80@1.75
Sulphuric, 66°, ₱ 100 lbs	1.00@1.75
Alkali—	
Refined, 48 p. c	1.50@1 55
Refined, 58°	1.40@1.45
Alum—Lump, ₱ lb	1¾
Ground, ₱ lb	1¾@2
Lump ₱ ton, Liverpool	£4 17 6
Sulphate of Alumina, ₱ ton	£4 10
Aqua Ammonia—18°, ₱ lb	4¾
20°, ₱ lb	6
22°, ₱ lb	6@7
26°, ₱ lb	10@11
Ammonia—Sul., ₱ 100 lbs	3.75
Carb., per lb	7½@8½
Arsenic—White, powdered, ₱ lb.	3¼@3½
Red, ₱ lb	5¾@6¾
White, at Plymouth, ₱ ton	£12 2 6d
Asbestos—Am., p. ton	$50@$300
Italian, p. ton, c. i. f. L'pool	£18@£25
Asphaltum—P. ton	13.00
Prime Cuban, ₱ lb	4½@5½c
Hard Cuban, ₱ ton	$28.00
Trinidad, refined, ₱ ton	$30.00
Barytes—Sulph., Am. prime white	17@20
Sulph., foreign, floated, p. ton	19½@21.50
Sulph., off color, p. ton	11.50@14.00
Carb., lump, f.o.b. L'pool, ton	£8
No. 1, casks, Runcorn	£4 10 0
No 2, bags, Runcorn	3 15 0
Bleach—Over 35 p.c., ₱ lb	1.70@1.75
Borax—Refined, ₱ lb	9½@9¾
Concentrated	7¾@8¾
Refined at Liverpool, ₱ ton	£29
Brimstone—*See Sulphur.*	
Bromine—₱ lb	37@38
Chalk—₱ ton	1.75
Precipitated, ₱ lb	4¾@5
China Clay—English, ₱ ton	13.50@18.00
Southern, ₱ ton	13.50
Chrome Yellow—₱ lb	10@25
Cobalt—Oxide, ₱ lb	2.60@2.90
Copper—Sulph. English Wks, ton	£20@£21
Copperas—Common, ₱ 100 lbs	70
Best, ₱ 100 lbs	75@1.00
Liverpool, ₱ ton, in casks	£1 15s.
Cream of Tartar—Am. 99%	22½
Powdered, 99 p. c	23
Emery—Grain, ₱ lb	4½@5
Flour, ₱ lb	3¾@3½
Feldspar—Ground, ₱ ton	15.00
Fuller's Earth—Lump, ₱ bbl.	.90@95
Powdered, ₱ lb	1¾@2
Gypsum—Calcined, ₱ bbl.	1.25@1.50
Iodine—Resublimed	2.75
Kainit—₱ ton	10.00
Kaolin—*See China Clay.*	
Lead—Red, ₱ lb	6¾@9
White, American, in oil, ₱ lb	6¾@7¼
White, English, ₱ lb	8¼@8¾
Acetate, or sugar of, white	12@13
Lime Acetate—Amer. Brown	.95@1.00
" Gray	1.75@1.87½
Litharge—Powdered, ₱ lb	6¼@6¾
English flake, ₱ lb	9@9½
Magnesite—Greek, ₱ ton	20.00
Manganese—Crude, per unit	.23@.28
Oxide, ground, per lb	2¼@6½
Mercuric-Chloride—(*Corrosive Sublimate*) ₱ lb	70@72
Mineral Wool—₱ lb	2
Mica—In sheets according to size, 1st quality, ₱ lb	.25@$6 00
Ochre—Yellow, "B. F.," ₱ ton, f.o.b. mill	30.00
" "J. F. L. S.," ₱ lb. ex dock	2½
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston	5.75@7.00
Ground, ex vessel New York	11.00
Canadian Apatite, lump, f. o. b. at Montreal, ₱ ton	16.00
Phosphorus—₱ lb	70@75
Plumbago—Ceylon, ₱ lb	4@5
American, ₱ lb	5@7
Potassium—Cyanide, ₱ lb	.39@40
Bromide, ₱ lb	33
Chlorate, ₱ lb	13@14
Carb. ₱ lb	4.70@5.50
Caustic, ₱ lb	7½@8
Iodide	2.65@2.70
Muriate, ₱ 100 lbs	1.80
Nitrate, refined, ₱ lb	6@8
Bichromate, ₱ lb	10½@11
Sulphate, ₱ 100 lbs	2.30@2 35
Yellow Prussiate, ₱ lb	17½@18
Red Prussiate, ₱ lb	42@45
Pumice Stone—Select lumps, lb	3¼
Original cks., ₱ lb	1¾@2
Powdered, pure, ₱ lb	2¼@2½
Pyrites—Non-cupreous, p. units	10d
Quartz—Ground, ₱ ton	14.00@16.00
Rotten Stone—Powdered, ₱ lb.	3¼@3½
Lump, ₱ lb	6@10
Salt—Liverpool, ground ₱ sack	75@80
Turk's Island, ₱ bush	27@2
Salt Cake—₱ lb	1@1½
Saltpeter—Crude, ₱ lb.	5¼@5¾
Refined, ₱ lb	6@7
Soda Ash—Carb., 48 ⅌ 100 lbs	1 45
Caustic, 48 ⅌	1 30
Soda Caustic, 60⅌	2.10
" " 70⅌	2.27½@2.35
" " 74-76⅌	2.27½@2.35
Sal, English, ₱ 100 lbs	1.00
Sal, American, ₱ 100 lbs	90
Nitrate, 100 lbs	1.90@1.95
Strontium—Nitrate ₱ lb	9@10½
Sulphur—Roll, ₱ lb	1¾
Flour, ₱ lb	2
Crude Brimstone, 2s., ₱ ton	19.50
Crude Brimstone, 3ds, ₱ ton.	19.00
Talc—Ground French, ₱ lb	1¼@1½
Domestic, ₱ ton	$18@$20
c. i. f. Liverpool, ₱ ton	£4 5
Vermillion—American, ₱ lb.	61
English, ₱ lb.	82@85
Vitriol—(Blue), Ordinary, ₱ lb.	5½@5⅝
Extra, ₱ lb.	7
Zinc Oxide—Am., Dry, ₱ lb.	4½
Antwerp, Red Seal, ₱ lb.	6@6½
Paris, Red Seal, ₱ lb.	6¾@7

* Spot

THE RARER METALS.

Aluminum—(Metallic), ₱ lb.	$2.@$2.50
Sheet, per lb.	2.50
Arsenic—(Metallic) per lb.	.40
Barium—(Metallic), per gram	$4.00
Bismuth—(Metallic), per lb.	2.75
Cadmium—(Metallic), per lb.	1.00
Calcium—(Metallic), per gram	10.00
Cerium—(Metallic), per gram	7.50
Chromium—(Metallic), per gram	1.00
Cobalt—(Metallic), per lb.	6.00
Didymium—(Metallic), per gram	9.00
Erbium—(Metallic), per gram	7.50
Gallium—(Metallic), per gram	140.00
Glucinum—(Metallic) per gram	12.00
Indium—(Metallic), per gram	9.00
Iridium—(Metallic), per oz.	7.00
Lanthanum—(Metallic), per gr.	15.00
Lithium—(Metallic), per gram	10.00
Magnesium—Per lb.	4.50
Manganese—Metallic, per lb.	1.10
Chem. pure, per oz.	10.00
Molybdenum—(Metallic), per gm	.50
Niobium—(Metallic), per gram	5.00
Osmium—(Metallic), per oz	65.00
Palladium—(Metallic), per oz.	35.00
Platinum—(Metallic), per oz	9.00
Potassium—Metallic, per lb	28.00
Rhodium—(Metallic), per gram	5.00
Ruthenium—(Metallic), per gm.	5.50
Rubidium—(Metallic), per gram	2.00
Selenium—(Metallic), per oz.	1.80
Sodium—(Metallic) per lb.	2.50
Strontium—(Metallic), per gm.	.60
Tantallum—(Metallic) per gram	9.00
Telurium—(Metallic) per lb.	5.00
Thallium—(Metallic) per gram	.25
Titanium—(Metallic) per gram	2.25
Thorium—(Metallic) per gram	17.00
Tungsten—(Metallic) per oz.	2.25
Uranium—(Metallic), per lb.	5.00
Vanadium—(Metallic), per gm.	22.00
Yttrium—(Metallic), per gram	9.00
Zirconium—(Metallic), per oz.	65.00

BUILDING MATERIAL.

Bricks—Pale, ₱ 1,000	3 25@3.50
Jerseys, ₱ 1,000	5.50@6 50
Up Rivers, ₱ 1000	6 00@6.50
Haverstraw seconds, ₱ 1000	6.25@6.50
Haverstraw firsts ₱ 1,000	6.50@7.00
Fronts, nominal, ₱ 1000,	
Croton	14.00@16.00
Wilmington	20.00@21.00
Philadelphia	@22.00
Trenton	@22.00
Baltimore	
Building Stone—Amherst freestone, ₱ cu. ft.	95@1.00
Brownstone, ₱ cu. ft.	1.00@1.35
Granite, rough, ₱ cu. ft	45@1.25
Granite, Scotch ₱ cu ft.	1.00@1.15
Cement—Rosendale, ₱ bbl	.85@1.10
Portland, American, ₱ bbl	2 15@2.45
Portland, foreign, ₱ bbl	2 30@2.40
Portland, " special brands	2.45@2.75
Roman, ₱ bbl	2.65@2.85
Keene's coarse, ₱ bbl.	4.50@5.50
Keene's fine, ₱ bbl.	7.00@8.25
Slate—Purple and green roofing, ₱ 100 ft.	7.00@7.50
Red roofing, ₱ 100 sq. ft.	12.00
Black roofing, ₱ 100 sq. ft.	4.25@5.50
Lime—Rockland, common ₱ bbl.	1 00
Rockland, finishing, ₱ bbl	1.20
St. John, com. and finish, ₱ bbl.	.90@.95
Glens Falls, com. and fin., ₱ bbl	.85@1.10
Labor—Ordinary, ₱ day	1.50@2.00
Masons, ₱ day	4.00
Plasterers, ₱ day	4.00
Carpenters, ₱ day	3.50
Plumbers, ₱ day	3.50
Painters, ₱ day	2.50@3.50
Stonesetters, ₱ day	3.50@4.00
Tilelayers, ₱ day	3.50@4.50
Bricklayers, ₱ day	4 00